

---

# Wisconsin Karner Blue Butterfly Habitat Conservation Plan and Environmental Impact Statement

## Chapter 3: Alternatives Selected for Detailed Evaluation

This chapter provides information on the "Proposed Action" alternative, the "No Action" alternative and a comparison of the two. This chapter and Chapter IV, which describes the affected environment, form the foundation of the environmental impact assessment work that was completed in order to identify the environmental consequences outlined in Chapter V.

The descriptions of the Proposed Action and No Action alternatives are presented in slightly different manners due to the distinct nature of each alternative. Several aspects of the Proposed Action alternative are unique to the *Wisconsin Statewide Karner Blue Butterfly HCP* and are not present in the No Action alternative (e.g., the levels of conservation focus and associated conservation strategies, the non-partner participation strategy, the new institutional arrangements, and the application of adaptive management principles and associated monitoring efforts are all absent from the No Action alternative).

The description of the Proposed Action alternative includes discussion of:

- ☞ two broad conservation strategies,
- ☞ land management activities (with modifications),
- ☞ related conservation measures,
- ☞ involvement of non-partners,
- ☞ proposed institutional arrangements,
- ☞ the application of adaptive management principles, and
- ☞ incidental take of state listed species.

The description of the No Action alternative includes only a general overview and a description of land management activities as they are currently practiced in the absence of the HCP (i.e. in the absence of the Proposed Action alternative). Presentation in this manner recognizes the differing nature of the two alternatives and helps focus discussion and analyses on appropriate aspects of the Proposed Action alternative (i.e. that which is new). Table 3.3 in Part C of this chapter (pages 240-243) provides a comparison of the most salient features of each alternative.

This page intentionally left blank.

---

## A. Proposed Action Alternative

The proposed federal action is the issuance of a permit for the incidental take of Karner blue butterflies in Wisconsin pursuant to section 10(a)(1)(B) of the ESA. The permit would authorize the take of Karner blue butterflies on *all* non-federal lands in Wisconsin pursuant to a *Statewide Karner Blue Butterfly Habitat Conservation Plan* (Chapters I and II and Appendices A-G of this document), and incidental to otherwise lawful land management activities and development projects. The applicant for the permit is the Wisconsin DNR. Other parties to the permit comprise a partnership of the 27 public and private entities identified in Table 1.1 (page 9).

The proposed state action is the preparation of a *Statewide Karner Blue Butterfly Habitat Conservation Plan* (Chapters I and II and Appendices A-F of this document), species and habitat conservation agreements (conservation agreements) with each HCP partner and an incidental take permit (ITP) application. The proposed state action also includes the implementation of the actions outlined in these documents, as well as those outlined in an Implementing Agreement with the USFWS.

The 27 public and private partners participating in the HCP identified goals in their "Articles of Partnership." These include:

- ☞ developing an ecologically and economically sound solution integrating Karner blue butterfly conservation with economic and other land uses acceptable to the citizens of Wisconsin and the owners and managers of public and private lands;
- ☞ encouraging multiple species and barrens ecosystem management planning for those ownerships where such measures are desirable and feasible and acceptable by the landowners;
- ☞ assuring, on a landscape basis, no-net-loss of Karner blue butterfly habitat attributable to land use that would otherwise be legal; and
- ☞ providing for Karner blue butterfly metapopulation dynamics on landscapes managed to maintain the necessary dynamic processes.

See the Articles of Partnership in Appendix C for a complete list of partnership goals. The Karner blue butterfly HCP (Chapters I and II) represents a shift from the traditional emphasis on protection of individual organisms on fixed tracts of land to a broader, proactive approach to conservation and management.

The HCP partners have estimated their costs for implementation of the HCP at approximately \$600,000 annually. The DNR alone is committing a full-time employee to support

implementation and permit administration. Full funding commitments are discussed in Part G of Chapter II (pages 151-157).

## 1. Broad Conservation Strategies

The strength of this unique HCP is the commitment of conservation measures on large tracts of public and private land (partner lands) throughout the state of Wisconsin (see Figure 1.2, page 10). The 27 HCP partners have agreed to apply broad conservation measures as a framework for addressing Karner blue butterfly conservation. Specific management levels to benefit the Karner blue butterfly and its habitat will vary across partner activities and economic goals. Included in this HCP are two distinct levels of conservation focus:

- ☞ management with consideration for the Karner blue butterfly and its habitat, and
- ☞ management to feature, protect or enhance the Karner blue butterfly and its habitat.

Each of these levels of focus is described in Part C of Chapter II (pages 62-66) and examples of each are provided in Table 2.12 (page 67). Notably, all partners have chosen to engage in management with consideration for Karner blue butterflies. Seven partners have chosen to also manage some acreage to feature, protect or enhance the Karner blue butterfly and its habitat. A total of 264,916 acres are included in the HCP for management under one of these levels of focus. The breakdown of this acreage by partner is provided in Table 2.11 (pages 65-66) and the individual partners' conservation agreements. Figure 3.1 (page 198) depicts the location of all partner lands included in the HCP. These lands are depicted by ownership category in the three figures that follow. Figure 3.2 (page 201) depicts the location of DNR and county forest lands included in the HCP, Figure 3.3 (page 202) depicts the location of private lands included by partners, and Figure 3.4. (page 203) depicts the transportation corridors included in the plan. DNR properties included in the HCP are identified in Table 3.1 (pages 192-197).

Under the Proposed Action alternative, all partner lands in the state would be covered by an ITP, not just the lands identified in Figures 3.1-3.4. However, it is those lands identified in Figures 3.1-3.4 that are being proactively managed for Karner blue butterfly conservation. Lands being managed under each of these broad levels of conservation focus bear a relationship to documented Karner blue butterfly occurrences. One hundred ninety-seven of the 281 Karner blue butterfly element occurrences are located on partner lands included in the management with consideration category. One hundred twenty-six of these occur on public lands and 71 occur on private lands. An additional 34 element occurrence are located on lands that will be managed to protect or enhance Karner blue butterfly habitat; thirty-three occur on public lands and one occurs on private land.

---

Within each level of focus, four broad conservation strategies were identified as options to be selected by individual HCP partners for conserving the Karner blue butterfly and its habitat:

- ☞ management for long-term habitat,
- ☞ management for a shifting mosaic of habitat,
- ☞ management for dispersal corridors, and
- ☞ compensatory mitigation.

Partners have chosen one, several, or all of these strategies to integrate with their specific land management activities on acres identified for inclusion in the HCP. Table 2.13 (pages 78-79) indicates the conservation strategies selected by each partner. This table presents the broad conservation strategies in the context of the two levels of conservation focus discussed above. Figure 3.1 (page 198) depicts the locations of all lands in the state that will be managed under the HCP. The specific application of each of the land management strategies is further defined in each individual partner's legally-binding conservation agreement. Table 3.2 (pages 199-200) summarizes the relationship between the levels of focus, conservation strategies and specific land management activities.

Of the total 264,916 acres included, 227,191 acres will be managed with consideration for the Karner blue butterfly and its habitat. Clark, Eau Claire and Jackson County Forests, Northern States Power Co., The Nature Conservancy, the DOT and the DNR will use long-term habitat as a means of managing with consideration. Nearly all of the partners will manage for a shifting mosaic of habitat. All of the utility company partners, the DOT and the DNR will manage corridors with consideration for Karner blue butterflies. ANR Pipeline, Lakehead Pipe Line Co., Northern States Power Co., Wisconsin Gas Co., Alliant, Wisconsin Public Service Co. and the DOT are also committing to compensatory mitigation, but only if planned activities result in an *unanticipated* permanent take (i.e. if those areas where planned activities are to occur are found to be occupied by Karner blue butterflies). Any plans for mitigation will be approved by the USFWS.

Of the total 264,916 acres included in the HCP, 37,725 acres will be managed to feature, protect or enhance the Karner blue butterfly and its habitat. Seven partners have chosen this level of conservation focus. The Eau Claire, Jackson and Juneau county forests, Northern States Power Company, Wisconsin Gas Company, The Nature Conservancy and the DNR will use long-term habitat as a means to protect or enhance Karner blue butterfly habitat. Jackson County Forest and the DNR will also use a shifting mosaic strategy to protect or enhance habitat, and the DNR will manage a small number acres with a corridor strategy to protect or enhance Karner blue butterfly habitat (see Table 2.13, pages 78-79). Commitments to this management are documented in the individual partner's conservation agreements.

**Table 3.1. DNR Lands Included in the Statewide Karner Blue Butterfly Habitat Conservation Plan**

**Adams County**

Adams ranger station  
 Big Roche-a-Cri Fishery Area  
 Colburn Wildlife Area  
 Dells of the Wisconsin River Natural Area  
 Dorro Couche tower site  
 Friendship tower site  
 unnamed gift lands  
 Lake Camelot public access site  
 Lawrence Creek Wildlife Area  
 Leola Marsh Wildlife Area  
 Patrick Lake public access site  
 Quincy Bluff and Wetlands Natural Area  
 Campbell Creek remnant  
 Carter Creek remnant  
 Fordam Creek remnant  
 Little Roche-a-Cri remnant  
 Risk Creek remnant  
 Roche-a-Cri State Park  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 unnamed statewide non-point easement program lands  
 Upper Neenah Fishery Area  
 Wisconsin Dells tower site

**Barron County**

Arland tower site  
 Chetek tower site  
 Cumberland area storage facility  
 Cumberland Area Headquarters  
 Dummy Lake Fishery Area  
 Engle Creek Springs Fishery Area  
 extensive unnamed wildlife habitat lands  
 Little Granite Lake public access site  
 Loon Lake Wildlife Area  
 Maple Plain Rearing Station  
 New Auburn Wildlife Area  
 Duck Lake remnant  
 Hickey Creek remnant  
 Red Cedar River remnant  
 Upper Turtle Lake remnant  
 scattered unnamed wildlife habitat lands  
 Silver Creek Fishery Area

State-owned islands  
 unnamed statewide habitat areas lands  
 Turtle Creek Fishery Area  
 Tuscobia State Trail  
 Yellow River Fishery Area

**Burnett County**

Amsterdam Sloughs Wildlife Area  
 Clam Lake Wildlife Area  
 Clam River Fishery Area  
 Crex Meadows Wildlife Area  
 Culbertson Springs Fishery Area  
 Danbury tower site  
 Danbury Wildlife Area  
 Fish Lake Wildlife Area  
 Gandy Dancer State Trail  
 unnamed gift lands  
 Governor Knowles State Forest  
 Grantsburg ranger station  
 Kiezer Lake Wildlife Area  
 unnamed lup grant lands  
 Namekagon Barrens  
 Clam Lake remnant  
 Clam River remnant  
 Devils Lake remnant  
 Round Lake remnant  
 Sand Lake remnant  
 Yellow River remnant  
 Sand Creek Fishery Area  
 unnamed scattered forest lands  
 Siren tower site  
 Spring Creek Fishery Area  
 St. Croix River public access site  
 State-owned islands  
 unnamed statewide habitat areas lands  
 Timberland tower site  
 Trade Lake public access site  
 Webster ranger station

**Table continues on next page.**

---

**Table 3.1. DNR Lands Included in the Statewide Karner Blue Butterfly Habitat Conservation Plan, Cont.**

**Chippewa County**

Brunet Island State Park  
 Chippewa Moraine State Recreation Area  
 Cornell ranger station  
 Drywood Wildlife Area  
 Duncan Creek Fishery Area  
 Elk Creek Fishery Area  
 Flambeau Ridge tower site  
 Hay Creek Fishery Area  
 Ice Age Trail  
 Lake Wissota State Park  
 McCann Creek Fishery Area  
 Old Abe State Trail  
 Bob Lake remnant  
 Elk Creek remnant  
 Sand Creek remnant  
 Ruby tower site  
 Sand Creek Fishery Area  
 scattered unnamed wildlife habitat lands  
 Stang tower site  
 unnamed statewide habitat areas lands  
 unnamed statewide stream bank easement  
 program lands  
 Tom Lawin Wildlife Area

**Clark County**

Black River State Forest  
 Bruce Mound tower site  
 Black River remnant  
 Dickenson Creek remnant  
 scattered unnamed wildlife habitat lands  
 Twin Mound tower site

**Columbia County**

Dells of the Wisconsin River Natural Area  
 Lower Wisconsin State Riverway

**Crawford County**

Lower Wisconsin State Riverway

**Dane County**

Lower Wisconsin State Riverway

**Dunn County**

Bolen Creek Fishery Area  
 Chippewa River State Trail  
 Dunnville Wildlife Area  
 Elk Creek Fishery Area  
 extensive unnamed wildlife habitat lands  
 Hoffman Hills Recreation Area  
 Lake Menomin Fishery Area  
 Muddy Creek Wildlife Area  
 Nine Mile Island State Natural Area  
 Otter Creek Fishery Area  
 Red Cedar State Trail  
 Elk Creek remnant  
 Gilbert Creek remnant  
 Otter Creek remnant  
 Red Cedar River public access site remnant  
 South Fork Hay River remnant  
 Tainter Lake Spawning Marsh remnant  
 Torgerson Creek remnant  
 Wilson Creek remnant  
 Sand Creek Fishery Area  
 scattered unnamed wildlife habitat lands  
 unnamed statewide natural areas lands  
 unnamed stream bank easement program lands

**Eau Claire County**

Augusta Wildlife Area  
 Buffalo River State Trail  
 Chippewa River State Trail  
 Elk Creek Fishery Area  
 Fairchild ranger station  
 Clear Creek remnant  
 Seymour tower site  
 unnamed statewide habitat areas lands  
 unnamed statewide stream bank easement  
 program lands  
 unnamed stream bank protection program lands  
 West-Central Regional Headquarters  
 Wilson tower site

**Grant County**

Lower Wisconsin State Riverway

**Table continues on next page.**

**Table 3.1. DNR Lands Included in the Statewide Karner Blue Butterfly Habitat Conservation Plan, Cont.**

**Green Lake County**

extensive unnamed wildlife habitat lands  
 Grand River Marsh Wildlife Area  
 Green Lake Rearing Station  
 Heart Lake Rearing Station  
 Puckaway Rough Fish Station  
 Little Green Lake remnant  
 Rogers Memorial Habitat Preserve  
 scattered unnamed wildlife habitat lands  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 Upper Fox River public access site  
 White River Marsh Wildlife Area

**Iowa County**

Lower Wisconsin State Riverway

**Jackson County**

Albion Rearing Station  
 Beaver Creek Rearing Station  
 Black River Falls Area Headquarters  
 Black River Falls ranger station  
 Black River tower site  
 Black River State Forest  
 Buffalo River Fishery Area  
 Buffalo River State Trail  
 Half Moon Lake Fishery Area  
 Halls (Stockwell) Creek Fishery Area  
 Jay Creek State Natural Area  
 Knapp Mound tower site  
 North Bend Bottoms Wildlife Area  
 North Branch Trempealeau River Fishery Area  
 Oak Ridge tower site  
 Allen Creek remnant  
 Black River remnant  
 South Branch Trempealeau River remnant  
 Washington Coulee remnant  
 Saddle Mound tower site  
 unnamed scattered wildlife habitat lands  
 Smith Pond Fishery Area  
 South Beaver Creek Wildlife Area  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 unnamed stream bank protection program lands

Tank Creek Fishery Area  
 Trump Coulee Rearing Station

**Jefferson County**

Kettle Moraine State Forest - Southern Unit

**Juneau County**

Buckhorn State Park  
 Buckhorn Wildlife Area  
 Cranberry Rock tower site  
 Dell Creek Wildlife Area  
 Dells of the Wisconsin River Natural Area  
 Eagle Nest Flowage public access site  
 Elroy Sparta State Trail  
 unnamed gift lands  
 Hillsboro-Union Center State Trail  
 Hulburt Creek Fishery Area  
 Meadow Valley Wildlife Area  
 Mill Bluff State Park  
 Necedah ranger station  
 Necedah tower site  
 Brewer Creek remnant  
 Little Lemonweir River remnant  
 Rocky Arbor State Park  
 scattered unnamed wildlife habitat lands  
 unnamed statewide natural areas lands  
 unnamed statewide stream bank easement  
 program lands  
 The '400' State Trail

**La Crosse County**

Coon Creek Fishery Area  
 Coulee Experimental Forest  
 Great River State Trail  
 La Crosse Area Comprehensive Fishery Area  
 La Crosse River State Park  
 Mississippi Islands Wildlife Area  
 North Bend Bottoms Wildlife Area  
 scattered unnamed wildlife habitat lands  
 unnamed statewide habitat areas lands  
 unnamed stream bank protection program lands  
 Van Loon Wildlife Area

**Table continues on next page.**



---

**Table 3.1. DNR Lands Included in the Statewide Karner Blue Butterfly Habitat Conservation Plan, Cont.**

**Marinette County**

Beaver tower site  
 Green Bay West Shores Wildlife Area  
 Lake Noquebay public access site  
 Lake Noquebay Wildlife Area  
 Little River Rearing Pond  
 Menomonie River public access site  
 Middle Inlet tower site  
 Montana Lake Fishery Area  
 North Branch Beaver Creek Fishery Area  
 Peshtigo tower site  
 Pound ranger station  
 Seagull Bar Wildlife Area  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 unnamed statewide non-point easement program lands  
 Thunder Mountain tower site  
 Thunder River Rearing Station

**Marquette County**

Andrew Krakow Fishery Area and public access site  
 Caves Creek Fishery Area  
 French Creek Wildlife Area  
 Germania Wildlife Area  
 Grand River Marsh Wildlife Area  
 John A. Lawton Fishery Area  
 Lawrence Creek Wildlife Area  
 Mekan River Fishery Area  
 Montello ranger station  
 Laing Creek remnant  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 Upper Fox River public access site  
 Westfield Hatchery  
 White River Marsh Wildlife Area

**Monroe County**

Big Creek Fishery Area  
 Cataract Pond public access site  
 Cataract tower site  
 Coon Creek Fishery Area  
 Elroy-Sparta State Trail

Greenfield tower site  
 Kickapoo River Fishery Area  
 La Crosse Area Comprehensive Fishery Area  
 La Crosse River Fishery Area  
 La Crosse River State Recreation Area  
 Meadow Valley Wildlife Area  
 Mill Bluff State Park  
 Mill Creek Fishery Area  
 Pinnacle Rock Rearing Station  
 Rathbone Creek remnant  
 unnamed scattered forest lands  
 unnamed statewide stream bank easement program lands  
 Tomah ranger station

**Oconto County**

Bagley tower site  
 Copper Culture Mounds State Park  
 unnamed gift lands  
 Green Bay West Shores Wildlife Area  
 Lakewood Rearing Station  
 Mountain-Bay Recreation Trail  
 Oconto Falls ranger station  
 Peshtigo Brook Wildlife Area  
 South Branch Oconto River Fishery Area  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands

**Outagamie County**

Deer Creek Wildlife Area  
 Mack Wildlife Area  
 Maine Wildlife Area  
 Outagamie Wildlife Area  
 Wolf River-Hortonville Flats remnant  
 Wolf River-Spoehrs Marsh remnant  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 Wolf River Bottoms Wildlife Area  
 Wolf River public access site

**Table continues on next page.**

**Table 3.1. DNR Lands Included in the Statewide Karner Blue Butterfly Habitat Conservation Plan, Cont.**

**Polk County**

Behning Creek Fishery Area  
 East Lake Fishery Area  
 Gandy Dancer State Trail  
 Governor Knowles State Forest  
 InterState Park  
 Osceola Hatchery  
 Nimon Lake remnant  
 St. Croix Falls Hatchery  
 State-owned islands  
 Sterling tower site  
 Twin Lake public access site (Eureka)  
 Twin Lake public access site (Laketown)

**Portage County**

Buena Vista Wildlife Area  
 Dewey Marsh Wildlife Area  
 Emmons Creek Fishery Area  
 Hartman Creek State Park  
 Ice Age Trail  
 Little Plover River Fishery Area  
 Little Wolf River Fishery Area  
 Mead Wildlife Area  
 Paul Olson Wildlife Area  
 Radley Creek Fishery Area  
 Leary Creek remnant  
 Mack Creek remnant  
 North Fork Radley Creek remnant  
 Peterson & Sannes Creeks remnant  
 Stedmons Creek remnant  
 Ten Mile Creek - North Branch remnant  
 Richard A. Hemp Fishery Area  
 unnamed statewide natural areas lands  
 Whiting ranger station  
 Wolf River Fishery Area

**Richland County**

Lower Wisconsin State Riverway

**Sauk County**

Dells of the Wisconsin River Natural Area  
 Lower Wisconsin State Riverway  
 Mirror Lake State Park

**Sawyer County**

Bean Brook Fishery Area  
 Benson Creek Fishery Area  
 Beverly Lake Fishery Area  
 Connors Lake tower site  
 Dead Creek Springs Fishery Area  
 Flat Creek Wildlife Area  
 Grindstone Creek Fishery Area  
 Hayward Nursery  
 Hayward ranger station  
 Kissick Swamp Wildlife Area  
 McDermott Brook Fishery Area  
 Meteor tower site  
 Namekagon River Fishery Area  
 Big Lac Court Oreilles remnant  
 Big Sissabagama Lake remnant  
 Hauer Creek remnant  
 McDermott Creek remnant  
 Mosquito Brook remnant  
 Sand Lake Rearing Station  
 Sand Lake tower site  
 State-owned islands  
 Totagatic Wildlife Area  
 Tuscobia State Trail  
 Uhrenholdt Memorial Timber Demonstration Forest

**Shawano County**

Kolpack tower site  
 Mountain-Bay Recreation Trail  
 Navarino Wildlife Area  
 Shawano Lake Fishery Area  
 unnamed statewide habitat areas lands  
 Wiouwash State Trail

**St. Croix County**

Lower St. Croix State Riverway  
 St. Croix Islands Wildlife Area  
 unnamed statewide natural areas lands  
 Willow River State Park

**Walworth County**

Kettle Moraine State Forest - Southern Unit

**Table continues on next page.**

---

**Table 3.1. DNR Lands Included in the Statewide Karner Blue Butterfly Habitat Conservation Plan, Cont.**

**Washburn County**

Bean Brook Fishery Area  
 Beaver Brook Wildlife Area  
 Chippewa Falls to Ambridge State Trail  
 Ernie Swift Youth Camp  
 Five Mile tower site  
 Flat Creek Wildlife Area  
 Gov. Tommy G. Thompson Hatchery  
 Lampson tower site  
 Mackey Creek Fishery Area  
 McKenzie Creek Fishery Area  
 McKenzie tower site  
 Minong ranger station  
 Namekagon River public access site  
 Pear Lake public access site  
 Potato Lake tower site  
 Pear Lake remnant  
 Namekagon River remnant  
 Spooner Lake remnant  
 Sawyer Creek Fishery Area  
 Shell Creek Fishery Area  
 Shell Lake Rearing Station  
 Shelton tower site  
 State-owned islands  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 Totogatic Wildlife Area  
 Totogatic River Fishery Area  
 Whalen Creek Fishery Area

**Waukesha County**

Kettle Moraine State Forest - Southern Unit

**Waupaca County**

Deer Creek Wildlife Area  
 Embarrass River Fishery Area  
 Emmons Creek Fishery Area  
 unnamed gift lands  
 Hartman Creek State Park  
 Little Wolf River Fishery Area  
 Mukwa Wildlife Area  
 Myklebust Lake Natural Area  
 Navarino Wildlife Area

Radley Creek Fishery Area  
 Doty Creek remnant  
 Leer & Griffen Creeks remnant  
 Peterson & Sannes Creeks remnant  
 South Branch Pigeon River remnant  
 South Branch Blake Creek remnant  
 Waupaca River remnant  
 Whitcomb Creek remnant  
 Wolf River-Colic Slough remnant  
 Scandanavia tower site and ranger station  
 unnamed statewide habitat areas lands  
 unnamed statewide natural areas lands  
 Trout-Nace Creek Fishery Area  
 Waupaca River Fishery Area  
 Wolf River Fishery Area

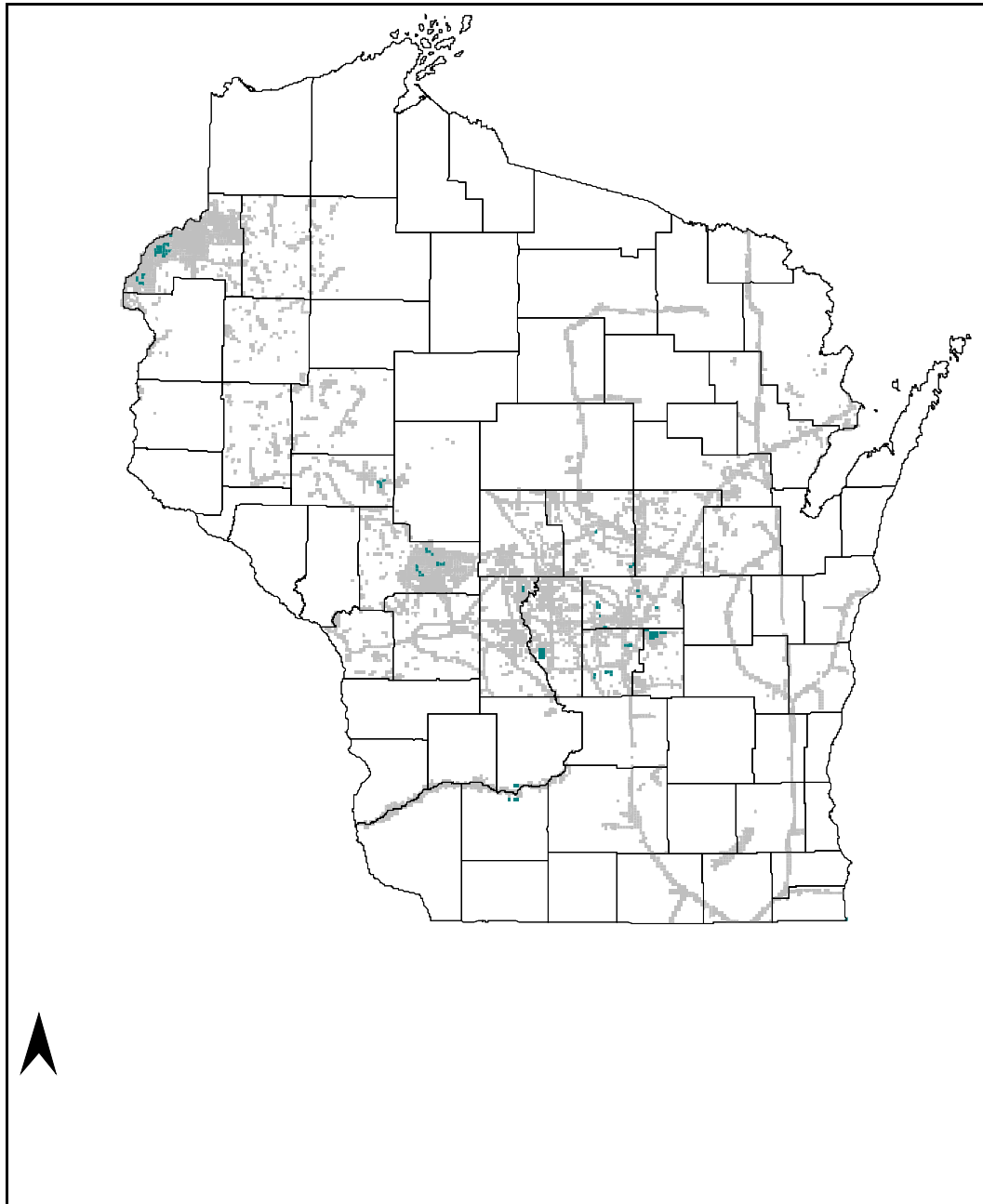
**Waushara County**

Big Roche-a-Cri Fishery Area  
 extensive unnamed wildlife habitat lands  
 Greenwood Wildlife Area  
 Mekan River Fishery Area  
 Pine River System Fishery Area  
 Poygan Marsh Wildlife Area  
 Carter Creek remnant  
 Little Silver Creek remnant  
 Pony Creek remnant  
 unnamed statewide natural areas lands  
 Wautoma communication tower  
 Wautoma ranger station  
 White River Fishery Area  
 Wild Rose Fish Hatchery  
 Willow Creek Fishery Area

**Wood County**

Auburndale transmitter site  
 Babcock ranger station  
 Griffith Nursery  
 Mead Wildlife Area  
 Paul Olson Wildlife Area  
 Sandhill Wildlife Area  
 South Bluff tower site  
 unnamed stream bank protection program lands  
 Wood County Wildlife Area

**Figure 3.1. Partner Lands Included in the HCP**



---

**Table 3.2. Overview of Relationship between Levels of Focus, Conservation Strategies and Land Management Activities**

**Level of Focus:** Management with Consideration for the Karner Blue Butterfly and its Habitat (227,191 acres, see Figure 3.1, page 198)

**Conservation Strategy:** Management for Long-term Habitat (used by seven partners)

**Land Management Activities:**

Forest Management (timber harvesting, stand improvement, prescribed burning)  
Barrens, Prairie and Savanna Management (prescribed fire, mechanical treatment, herbicide treatment, native plant propagation, grazing)  
Recreational Management (less intensive construction, maintenance, public use)  
Transportation Management (road maintenance, vegetation control)  
Utility Right-of-Way Management (maintenance of transmission lines, vegetation control, maintenance of pipelines)  
Other Land Management

**Conservation Strategy:** Management for a Shifting Mosaic of Habitat (used by 21 partners)

**Land Management Activities:**

Forest Management (timber harvesting, stand improvement, prescribed burning, forest roads, forest regeneration)  
Barrens, Prairie and Savanna Management (prescribed fire, mechanical treatment, herbicide treatment, native plant propagation, grazing)  
Recreational Management (less intensive construction, maintenance, public use)  
Other Land Management

**Conservation Strategy:** Management for Dispersal Corridors (used by 11 partners)

**Land Management Activities:**

Forest Management (prescribed burning, forest roads)  
Barrens, Prairie and Savanna Management (prescribed fire, mechanical treatment, herbicide treatment, native plant propagation)  
Recreational Management (intensive construction, less intensive construction, maintenance, public use)  
Transportation Management (road development, road maintenance, vegetation control)  
Utility Right-of-Way Management (construction of transmission lines, maintenance of transmission lines, vegetation control, construction of new pipelines and underground transmission lines, maintenance of pipelines)  
Other Land Management

**Conservation Strategy:** Compensatory Mitigation (used by eight partners)

**Table continues on next page.**

**Table 3.2. Overview of Relationship between Levels of Focus, Conservation Strategies and Land Management Activities, Cont.**

**Level of Focus:** Management to Feature, Protect or Enhance the Karner Blue Butterfly and its Habitat (37,725 acres, see Figure 3.1, page 198)

**Conservation Strategy:** Management for Long-term Habitat (used by seven partners)

**Land Management Activities:**

- Forest Management (timber harvesting, stand improvement, prescribed burning)
- Barrens, Prairie and Savanna Management (prescribed fire, mechanical treatment, herbicide treatment, native plant propagation, grazing)
- Recreational Management (less intensive construction, maintenance, public use)
- Transportation Management (road maintenance, vegetation control)
- Utility Right-of-Way Management (maintenance of transmission lines, vegetation control, maintenance of pipelines)
- Other Land Management

**Conservation Strategy:** Management for a Shifting Mosaic of Habitat (used by two partners)

**Land Management Activities:**

- Forest Management (timber harvesting, stand improvement, prescribed burning, forest roads, forest regeneration)
- Barrens, Prairie and Savanna Management (prescribed fire, mechanical treatment, herbicide treatment, native plant propagation, grazing)
- Recreational Management (less intensive construction, maintenance, public use)
- Other Land Management

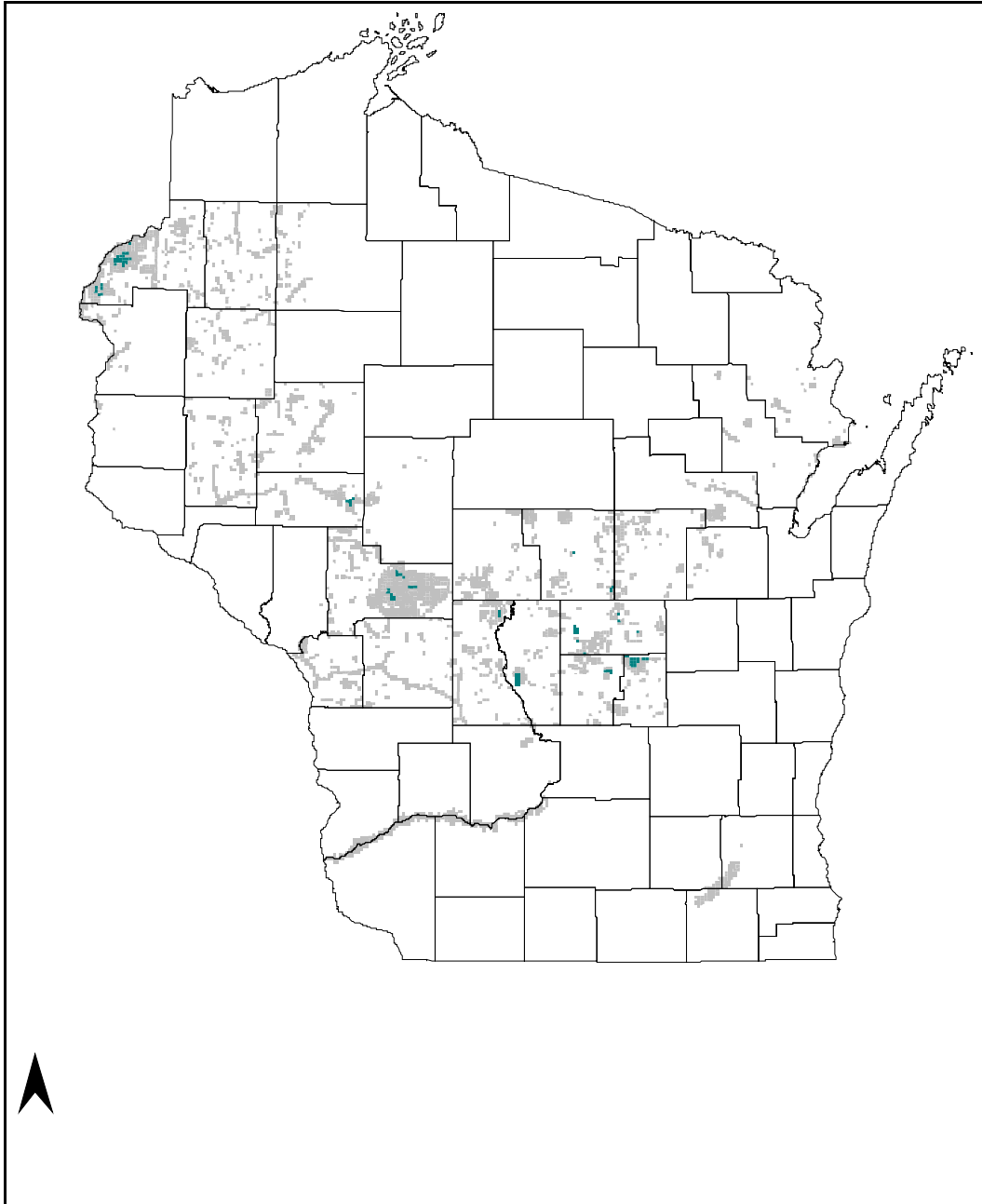
**Conservation Strategy:** Management for Dispersal Corridors (used only by the DNR)

**Land Management Activities:**

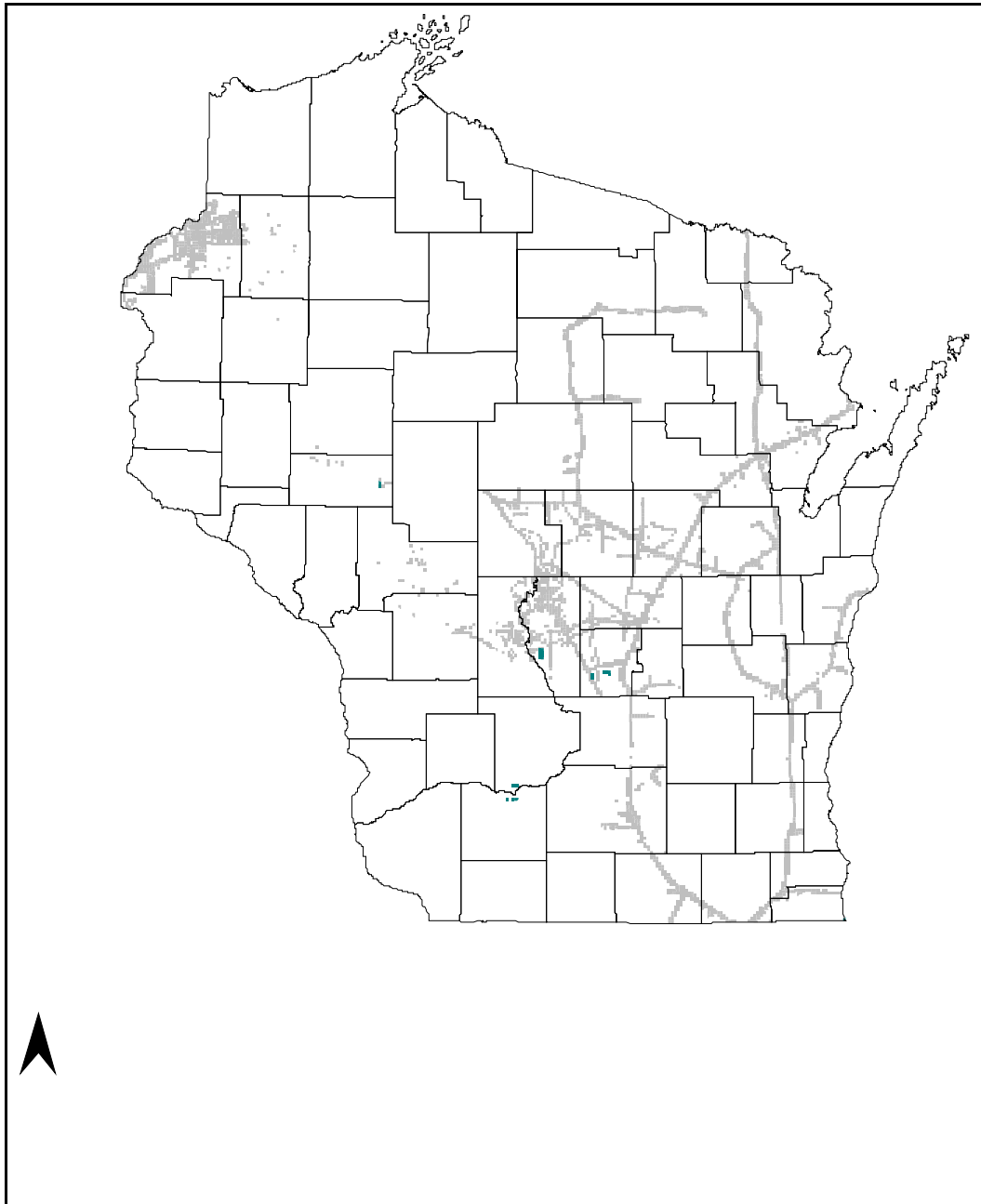
- Forest Management (prescribed burning, forest roads)
- Barrens, Prairie and Savanna Management (prescribed fire, mechanical treatment, herbicide treatment, native plant propagation)
- Recreational Management (intensive construction, less intensive construction, maintenance, public use)
- Transportation Management (road development, road maintenance, vegetation control)
- Utility Right-of-Way Management (construction of transmission lines, maintenance of transmission lines, vegetation control, construction of new pipelines and underground transmission lines, maintenance of pipelines)
- Other Land Management

---

**Figure 3.2. DNR and County Forest Lands Included in the HCP**



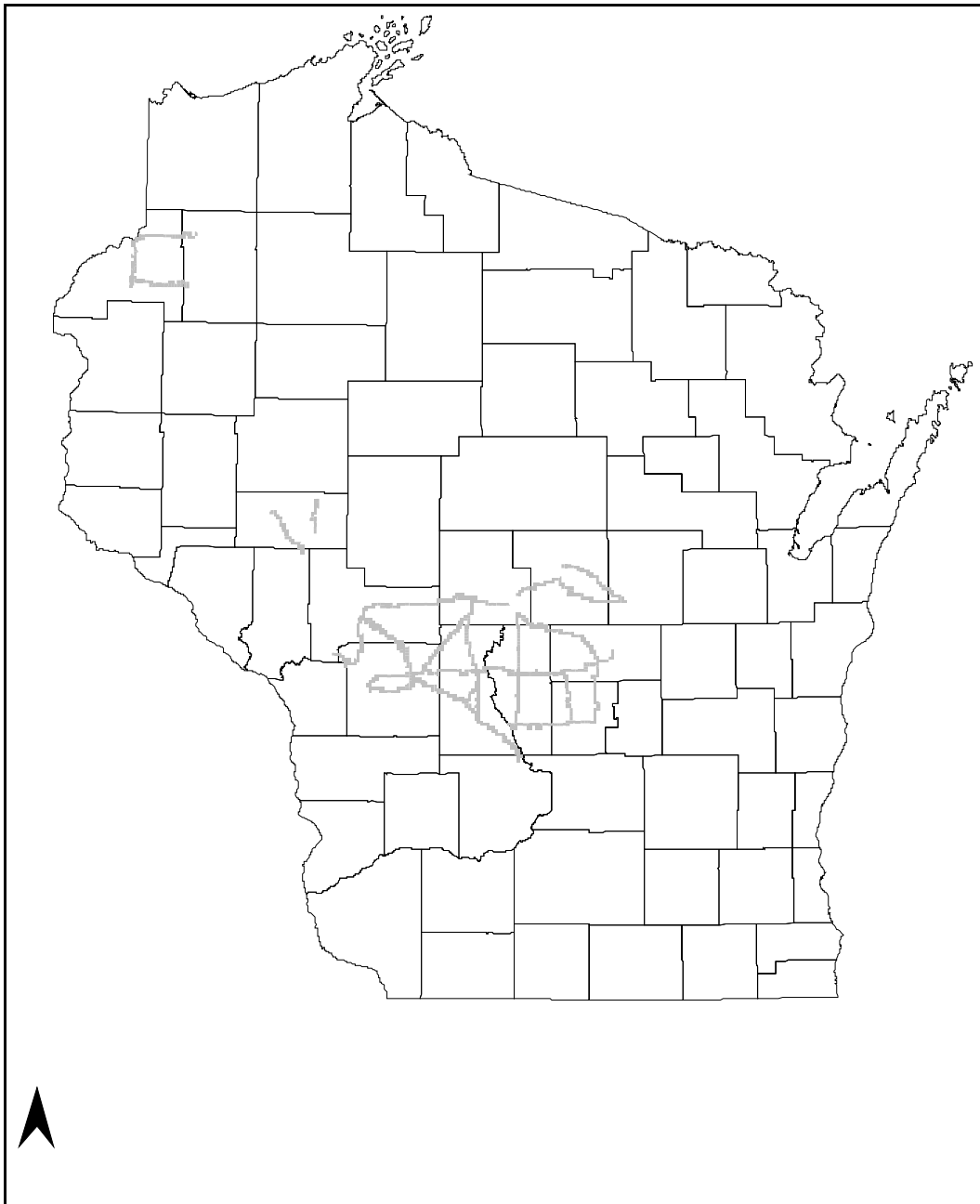
**Figure 3.3. Private Lands Included in the HCP**





---

**Figure 3.4. Transportation Corridors Included in the HCP**



**Conservation Premise.** The most effective approach to terrestrial invertebrate conservation is that based on conservation of habitat (New 1984, Coy 1995). Disturbance is an integral part of ecosystem process (Sprugel 1991, Rogers 1996). The conservation of disturbance can be thought of as equally important as the conservation of species. The restoration of ecological processes, including disturbance, is an important tenet of conservation biology (Pickett and White 1985, White 1987, Rogers 1996). Key (1978) points out that even small areas of indigenous flora subject to periodic disturbance can be a valuable refuge for insects that have been completely eliminated from adjacent sites. On-going disturbance maintains an early successional community. The Karner blue butterfly and its host plant wild lupine are typically found in these types of communities. As such, an important premise of the HCP is that the maintenance of suitable habitat relies on ecological disturbance; the maintenance of habitat through disturbance is the basis for each of the conservation strategies included in the HCP.

**Management for Long-Term Habitat.** This strategy is discussed on page 72 in Chapter II. The most common long-term habitat strategy will be barrens community restoration and management (as on several DNR properties). On-going disturbance is most often accomplished through periodic mowing or prescribed fire with rotation intervals of three to ten years. In addition, some areas not considered barrens communities proper, such as roadside rights-of-way, may also be managed on a long-term basis through periodic mowing.

Some partners have identified long-term habitat as part of their strategy, but do not yet have specific plans for accomplishing this strategy. However, their individual conservation agreements and the HCP require such a plan, including a timeline for implementation, to be submitted with their first annual report. So, such a plan must be developed.

**Management for a Shifting Mosaic.** Management for disturbances and the resulting patch dynamics across large landscapes has been suggested as a flexible institutional approach to resource management that incorporates planned and unplanned disturbances into long-term management goals for ecosystem integrity and resource extraction (Everett and Baumgartner 1997). Several of the HCP partners have embraced this concept and plan to implement it through the shifting mosaic strategy outlined in Part C of Chapter II (pages 73-76).

Forest systems are in a constant state of change (Botkin and Sobel 1975). The current mosaic includes forest stands with different species, age classes, stocking levels, height diversity, access corridors and acreage that have been deliberately manipulated by the partners. The HCP partners want to use this strategy to maintain Karner blue butterfly habitat in a diverse patchwork of forested stands in a slowly changing distribution over time across the landscape. Unless other intentions are described in the individual conservation agreements, the "shifting mosaic" is a land management strategy whereby suitable habitat patches are created by routine land management practices conducted by the partners across their landscape. This patchwork

---

of Karner blue butterfly habitats allows the opportunity for colonization of newly created habitat

---

from nearby maturing patches with declining Karner blue butterfly habitat due to succession.

Under this strategy, allowing land management activities with consideration for Karner blue butterflies to continue will maintain the disturbance pattern that has historically provided the rich mosaic of habitats where Karner blue butterflies exist today.

The methods used to plan these disturbance patterns, or a shifting mosaic across the landscape, already exist in the form of a land and vegetation inventory system operated by each partner. The planning and implementation of the shifting mosaic strategy will rely heavily on this same system. In other words, this conservation strategy builds on existing planned management activities.

Most, if not all, partners now rely on computer technology to store, manipulate and retrieve attribute data for each land unit. Some partners operate geographic information system (GIS) technology which links digital maps to inventory data for each land unit. These systems provide the information base for decision-making.

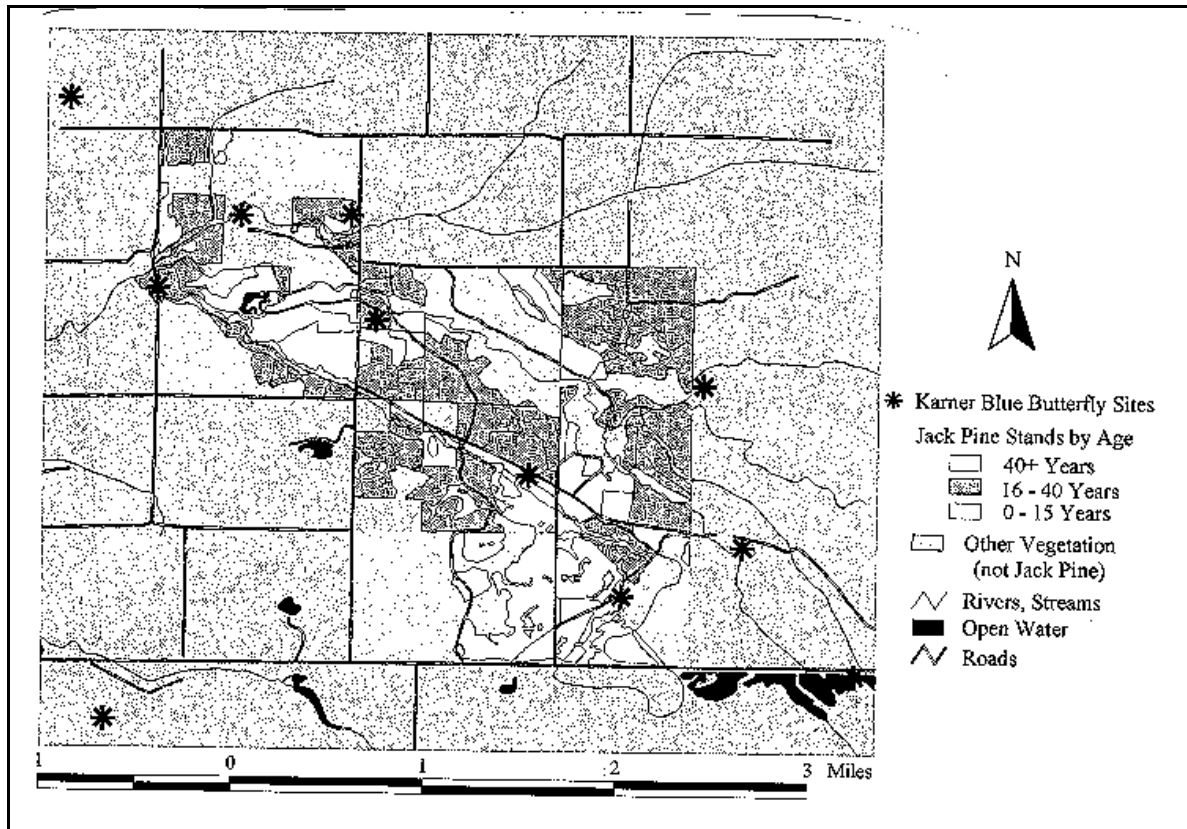
As discussed in Chapter II (pages 73-76), Figure 3.5 displays this type of forest inventory information linked with actual Karner blue butterfly element occurrences on the Black River State Forest. These Karner blue butterfly occurrences indicate that the butterfly is recently present and using known habitat. These individual butterfly sites have been historically disturbed. The present vegetation composition and structure is changing with growth and aging. If left to natural succession, wild lupine and other disturbance-dependent species will eventually be replaced. The shifting mosaic strategy recognizes this natural process and allows for timely, planned disturbance of the forest stands.

Figure 3.5 depicts the age class distribution of jack pine stands. As explained in Chapter II (page 75), the location of the various stands (age classes) in proximity to each other provides substantial opportunities to shift habitat across the landscape in a moving mosaic fashion.

**Management for Dispersal Corridors.** The management of dispersal corridors is discussed on page 76 in Chapter II and commitments to the strategy are included in individual partners' conservation agreements. Under this strategy, some lands will be managed to provide dispersal corridors or linear stretches of habitat. Generally, these areas are along road or utility ROWs. However, some management for dispersal corridors will occur on forest lands.

**Compensatory Mitigation.** Compensatory mitigation will be used only to mitigate negative land management activities (i.e. where an unanticipated permanent take occurs). As indicated on page 77 in Chapter II and elsewhere in the HCP, *all* permanent take must be mitigated and any mitigation plans *must* be approved by the DNR and the USFWS.

**Figure 3.5. Shifting Mosaic Strategy Applied to Black River State Forest**



---

## 2. Land Management Activities (with Modifications)

Pages 223-239 in Part B of this chapter describe current land management activities typically engaged in by the HCP partners as they are currently practiced. The HCP partnership developed a number of modifications to these current land management practices to ensure consideration for Karner blue butterflies and their habitat. Modifications to management practices are outlined in individual partners' conservation agreements, Part C of Chapter II (pages 80-96) and Appendix F. Some partners have outlined specific conservation measures in their conservation agreements. Other partners have agreed to follow the guidelines included in the HCP and Appendix F. Others will do a mix of what is in the HCP (and Appendix) and their own approach. All commitments, however, are stated in the partners' conservation agreements, especially if they are to be different than what is included in the HCP. These modifications are based on the best available scientific and applied knowledge and include changes in how management is carried out, as well as timing considerations that correspond with the Karner blue butterfly and wild lupine life cycles. Guidelines for use of pesticides (herbicides, in particular) with consideration of Karner blue butterflies will be developed during the first year of HCP implementation.

Land management activities are grouped into five categories:

- ☞ forest management,
- ☞ barrens, prairie and savanna management,
- ☞ recreational management,
- ☞ transportation management, and
- ☞ utility ROW management.

HCP partners intend to use these categories of management to implement the broader statewide conservation strategies discussed above. Not all of the management activities can be used to accomplish all four of the broad conservation strategies. Land management activities to accomplish specific strategies are identified in Table 2.15 (pages 95-96). Partner commitments to specific land management activities are outlined in Table 2.14 (pages 93-94) and are specifically identified in each partner's conservation agreement.

Descriptions of typical land management activities without modifications for Karner blue butterfly conservation are discussed in the No Action alternative in Part B of this chapter (pages 221-239). Forest industry partners, county forests, some utilities and the DNR will use modifications of forest management practices to manage for long-term habitat, a shifting mosaic and/or dispersal corridors (see Tables 2.14 and 2.15, pages 93-96). County forests, the Nature Conservancy, some utilities, the DOT and the DNR will use modifications to barrens, prairie and savanna management practices to apply long-term habitat, shifting mosaic and/or dispersal corridors conservation strategies. Similarly, forest industry partners, county forests, the Nature Conservancy and the DNR will modify recreational management activities in order to apply these same three conservation strategies. Utility partners and the DOT will be involved in modifying transportation management and ROW management practices primarily for application of the

long-term habitat and dispersal corridors strategies, but also as part of a shifting mosaic strategy in some situations.

### **3. Related Conservation Measures**

The HCP partners have agreed to conduct HCP-related research as part of implementation. Recent and current research activities are outlined in Part D of Chapter II (pages 114-124). The results of this research will be used by HCP partners, through the adaptive management process described below, as they evaluate the effectiveness of plan implementation and the use of specific land management activities. Part D of Chapter II also outlines proposed research pending (pages 119-120) and objectives of future research (pages 121-123). In addition, the HCP partners will look to research conducted as part of the federal recovery planning efforts for results which may be applicable to HCP implementation.

The DNR, in cooperation with other HCP partners and participants, will coordinate a lupine and nectaring plant seed gathering program for use in the conservation effort. The DNR is willing to provide training in seed harvesting and cleaning as part of its other assistance programs. The DNR will also provide or work with others to make seed available for land conservation efforts. The DNR will coordinate efforts to help assure seed is available for others who choose to use seeding as part of their enhancement efforts. The USFWS has contributed \$25,000 to help with lupine and nectar plant seed collection and processing.

In addition to the management proposed as part of the HCP, a number of partners are participating in the federal recovery planning efforts lead by the USFWS. These efforts are discussed in Part F of Chapter II (pages 147-151). HCP partner acreage commitments being made to the recovery process are identified in Table 2.20 (page 150). DNR properties being committed to recovery efforts are identified in Table 2.21 (page 151). In total, HCP partners are committing more than 23,000 acres to the federal recovery efforts.

Finally, a few partners (e.g., the DNR, the Nature Conservancy) have chosen to manage for other species associated with the Karner blue butterfly and its habitat. Management for associated species takes a broader habitat or ecosystem approach to conservation.

---

#### 4. Involvement of Non-Partners

In addition to the partners identified in Table 1.1 (page 9), it is proposed that other private landowners be brought under the coverage of the ITP through participation in the HCP process identified in Part F of Chapter II (pages 127-140) and Appendix D. Figure 3.6 (pages 212-213) outlines the participation process in flowchart form.

As part of this strategy, the partners have identified "significant population areas" and "areas of conservation emphasis" as a means of focusing their education and outreach efforts. Significant population areas roughly correspond to the viable populations and large viable populations identified in the Karner Blue Butterfly Working Draft Recovery Plan (USFWS 1997), and generally have concentrations of Karner blue butterfly element occurrences. The larger areas of conservation emphasis encompass element occurrences, potential habitats and potentially unidentified populations outside the significant population areas. Eight areas of conservation emphasis and 13 significant population areas were identified.

During the development of the HCP inclusion strategy, the DNR provided the USFWS field office detailed maps of significant population areas and areas of conservation emphasis. Figure 2.11 (page 131) was derived from these more detailed maps and presents a generalized depiction of the locations of significant population areas and areas of conservation emphasis. Due to constraints of the map scale, some of the areas have been combined in Figure 2.11. A more detailed county-by-county description of these areas follows.

**Adams County.** One area of conservation emphasis with a single significant population area was identified in west central Adams County. The area of conservation emphasis extends into east central Juneau County, but the entire significant population area is located in Adams County. Approximately 60 percent of the land included in the significant population area is owned by HCP partners. The 4,500 acre Quincy Bluff State Natural Area, involving both DNR and Nature Conservancy ownership, is a prominent partner holding.

Karner blue butterflies do not currently occupy the Quincy Bluff area, but it is anticipated that translocation or colonization will be used to ensure population viability in this area.

**Burnett County.** Two significant population areas are included in the single area of conservation emphasis identified in western Burnett County. The area of conservation emphasis includes a small portion (approximately two townships) of northwestern Polk County. One significant population area includes the Crex Meadows State Wildlife Area, and the other includes the Fish Lake State Wildlife Area and the Governor Knowles State Forest. Approximately 95 percent of the land included in these two significant population areas is in public ownership.

**Clark County.** A single area of conservation emphasis was identified in western Clark County.

This area extends into eastern and central Eau Claire County and includes one significant population area consisting mostly of county forest lands. More than 90 percent of the land in the area is owned by HCP partners.

**Eau Claire County.** A single area of conservation emphasis was identified in eastern and central Eau Claire County. This area extends into western Clark County and includes one significant population area. More than 90 percent of the land in the area is owned by HCP partners, primarily county forests.

**Green Lake County.** One area of conservation emphasis with a single significant population area was identified in northern Green Lake County. The White River Marsh State Wildlife Area occupies nearly 77 percent of this area. The area is targeted for a minimum viable population in the federal Karner Blue Butterfly Working Draft Recovery Plan (USFWS 1997)

**Jackson County.** Three significant population areas were identified in Jackson County. Two of these areas are located in a single area of conservation emphasis in the central and eastern part of the county. The other area of conservation emphasis is situated immediately south of the first and extends into northern and central Monroe County. This area of conservation emphasis includes the third significant population area, which also extends into northern Monroe County. Approximately 95 percent of the acreage in the significant population areas is owned by HCP partners.

**Juneau County.** Two areas of conservation emphasis were identified in Juneau County. One of these areas, located in the east central part of the county, extends into west central Adams County. The only significant population area included in this area of conservation emphasis is located entirely within Adams County. Approximately 50 percent of the land in this area of conservation emphasis is owned by HCP partners. The second area of conservation emphasis is located in the northern part of the county and extends into southern Wood County. This area of conservation emphasis includes two significant population areas, one in Juneau County and one in Wood County. The Juneau County significant population area includes the Meadow Valley Wildlife Area and the Necedah National Wildlife Refuge. About 80 percent of the land included in this area of conservation emphasis is either in HCP partner or federal ownership.

**Monroe County.** Two significant population areas were identified in Monroe County. Both are located within a single area of conservation emphasis which extends into south central Jackson County. One of the significant population areas is centered on Fort McCoy and the other extends into southern Jackson County. All of the land in the significant population area is either a part of Fort McCoy or is owned by an HCP partner.

**Polk County.** There are no significant population areas in Polk County. Approximately two townships are included in an area of conservation emphasis that extends into western Burnett

---



---

County.

**Portage County.** A small area of conservation emphasis was identified in southeastern Portage County. The area, and its single significant population area, extends across the border into southwestern Waupaca County. The Emmons Creek State Fishery Area comprises about 80 percent of the landownership in the area.

**Waupaca County.** A small area of conservation emphasis was identified in southwestern Waupaca County. The area, and its single significant population area, extends across the border into southeastern Portage County. The Emmons Creek State Fishery Area is located in the area. Only about 10 percent of the acreage in the significant population area is owned by HCP partners. There is a fair amount of non-partner land with potential Karner blue butterfly habitat located within the area of conservation emphasis.

**Waushara County.** The only significant population area identified in Waushara County is centered on the Greenwood State Wildlife Area in the east central part of the county. This area is situated within an area of conservation emphasis that occupies approximately two townships. Approximately 20 percent of the acreage in the significant population area is owned by HCP partners.

**Wood County.** One area of conservation emphasis was identified in Wood County. This area is located in the southern part of the county and extends into northern Juneau County. The area includes two significant population areas, one in Wood County and one in Juneau County. The Wood County significant population area includes the Sandhill State Wildlife Area. About 90 percent of the land in the area is owned by HCP partners.

**Figure 3.6 Flow Chart for Determining Options for ITP Coverage**

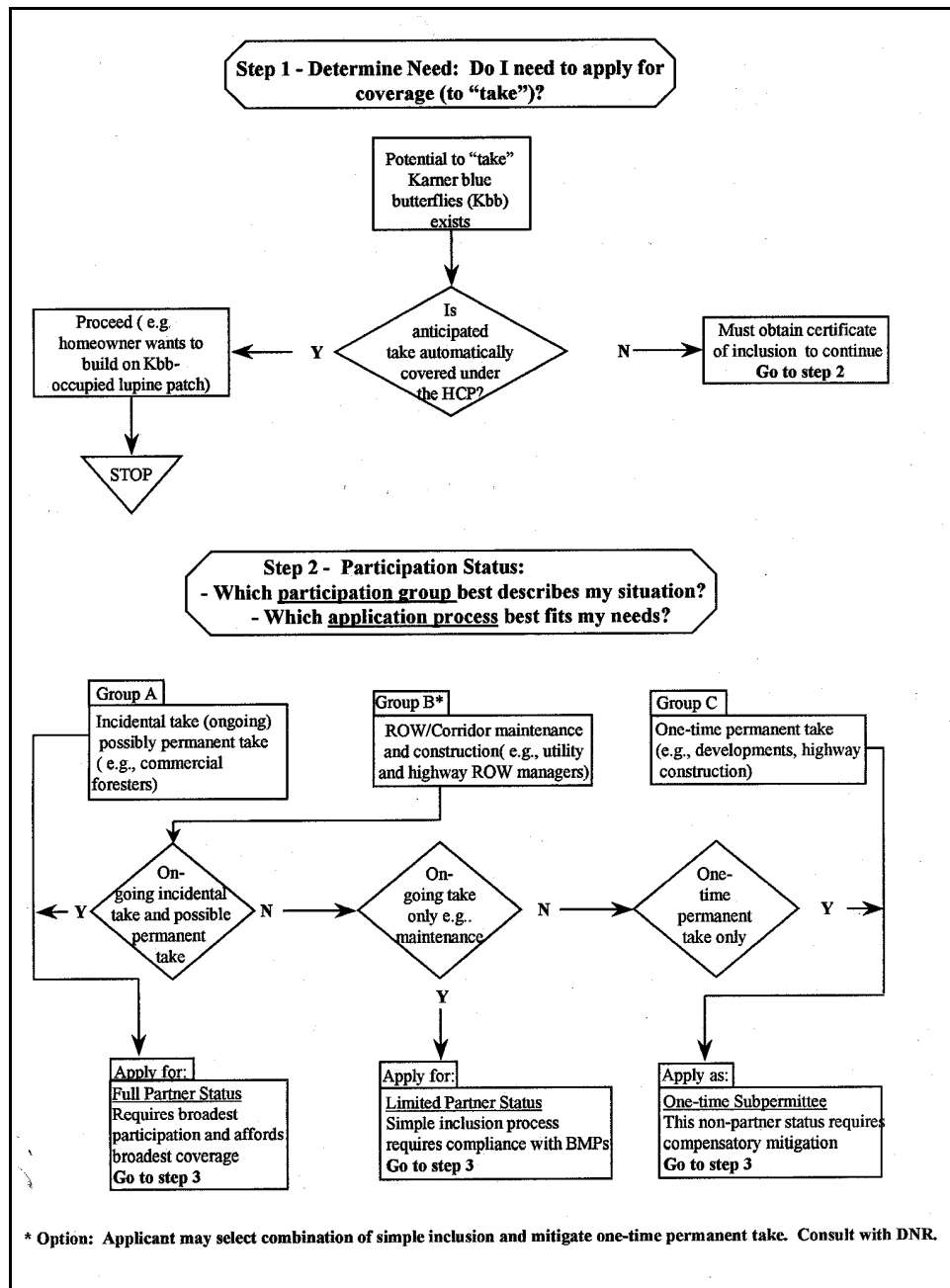
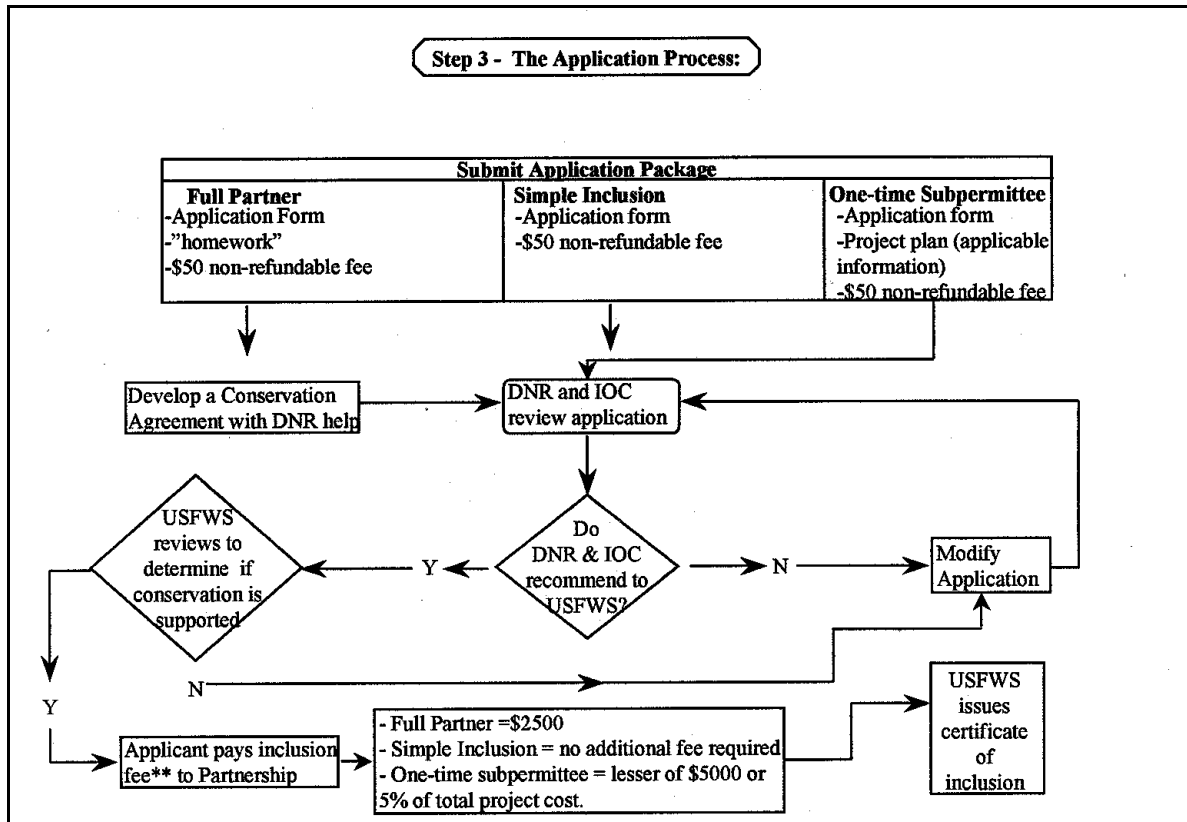


Figure continues on next page.

**Figure 3.6 Flow Chart for Determining Options for ITP Coverage, Cont.**



\*\* Note: Fees may be waived for governmental units.

## **5. Institutional Arrangements**

A brief history of and a copy of the Articles of Partnership for the Wisconsin Karner Blue Butterfly HCP effort are included in Appendix C. In addition, Part H of Chapter II (pages 159-179) outlines the institutional arrangements that will be used to implement this HCP.

The DNR is the lead applicant for the ITP. Under the ESA, if the USFWS issues an ITP to the DNR, the two agencies will enter into a legally-binding Implementing Agreement. This agreement will outline all of the responsibilities associated with the permit and HCP implementation. It will also establish the reporting relationship between the applicant (the DNR) and the USFWS.

The DNR will serve as the permit administrator. DNR commitments to this role are outlined on pages 159-163. In this capacity, the DNR will have final authority and responsibility for decisions related to the ITP. However, the agency will routinely work with and seek the advice of the other HCP partners through formal and informal communication channels, including the Implementation Oversight Committee (IOC) described on pages 166-172. This team will be representative of the partnership and will operate within the Articles of Partnership (see Appendix C). The IOC will act as an advisor to the DNR on permit issues, however, the DNR will be responsible for final decisions to assure the ITP is not jeopardized.

Legally-binding Species and Habitat Conservation Agreements (conservation agreements) between the individual HCP partners and the DNR will establish permit coverage for the partners. These conservation agreements form the basis of the DNR's application for a statewide ITP. Each conservation agreement is consistent with and tailored to the resources, capabilities and commitments of individual partners. An example of a conservation agreement is included in Appendix D. The contractual nature of the conservation agreements and their administration is discussed in Part H of Chapter II (pages 163-166).

The non-partner participation plan (discussed below) will be subject to a review component to assure its effectiveness and adaptability. The review component of the plan is outlined on pages 145-147 in Part F of Chapter II. It is a qualitative approach which will rely on the recommendations of the partnership and the USFWS.

In addition to the arrangements discussed above, Part H of Chapter II also includes information on future applications for partner status or participation, the permit period, permit amendments, permit renewal and the USFWS's "no surprises" rule (pages 175-179). Part I of Chapter II (page 181) establishes procedures for amendments resulting from future species listings.

---

## 6. Application of Adaptive Management Principles

Adaptive management is a structured approach for addressing uncertainty in natural resource management by providing for the improvement of methods as new information becomes available. Such an approach recognizes that the information necessary for management decisions is not always known or available. By definition, adaptive management also includes a commitment to change management approaches when it is deemed appropriate. The diagram in Figure 3.7 (page 217) summarizes the adaptive management process.

The adaptive management process begins immediately following completion of the original HCP and issuance of the ITP. The process consists of eight distinct components. The first is to implement the recommendations and protocols identified in the HCP and associated appendices. This would include not only recommendations and protocols for land management practices of the HCP partners, but also for outreach and education to the general public. Land management in this context includes activities such as site preparation, regeneration, or harvesting methods for timber stands; propagation, burning, or mechanical and chemical management for barrens or prairies; and development and maintenance practices for recreation, utility, or transportation management; as well as others. Outreach and education would include an initial awareness campaign, and then focussed efforts in the significant population areas, the areas of conservation emphasis, the high potential area, and finally, the remainder of the state. This HCP implementation represents the *action* component of the adaptive management process.

The next three steps represent the *monitoring* component of the management process. The first of the three, implementing the surveying and monitoring procedures, includes self-monitoring, effectiveness monitoring and compliance audits. Self-monitoring will help partners determine their success at meeting their individual conservation agreement goals, while effectiveness monitoring will be used for assessing the effectiveness of the HCP for meeting its statewide conservation goals. Also included in this step are the compliance audits, which will be individual evaluations of the partners' fulfillment of their conservation agreements. The next step is the development of monitoring reports. In the final monitoring step, data collected during implementation and presented in the monitoring reports is processed and analyzed.

The next two steps include internal and external influences or catalysts. These changes may contribute to the need to amend management practices. External catalysts include changed circumstances, legal or policy changes, or partnership changes. Changed circumstances are events such as anticipated natural occurrences, listing of a new species, loss of Karner blue butterflies from a site, modification of permitted activities, or modification of the monitoring program. Legal or policy changes include events such as changes in the structure or interpretation of the ESA. Changes in partnership may include simply the addition or

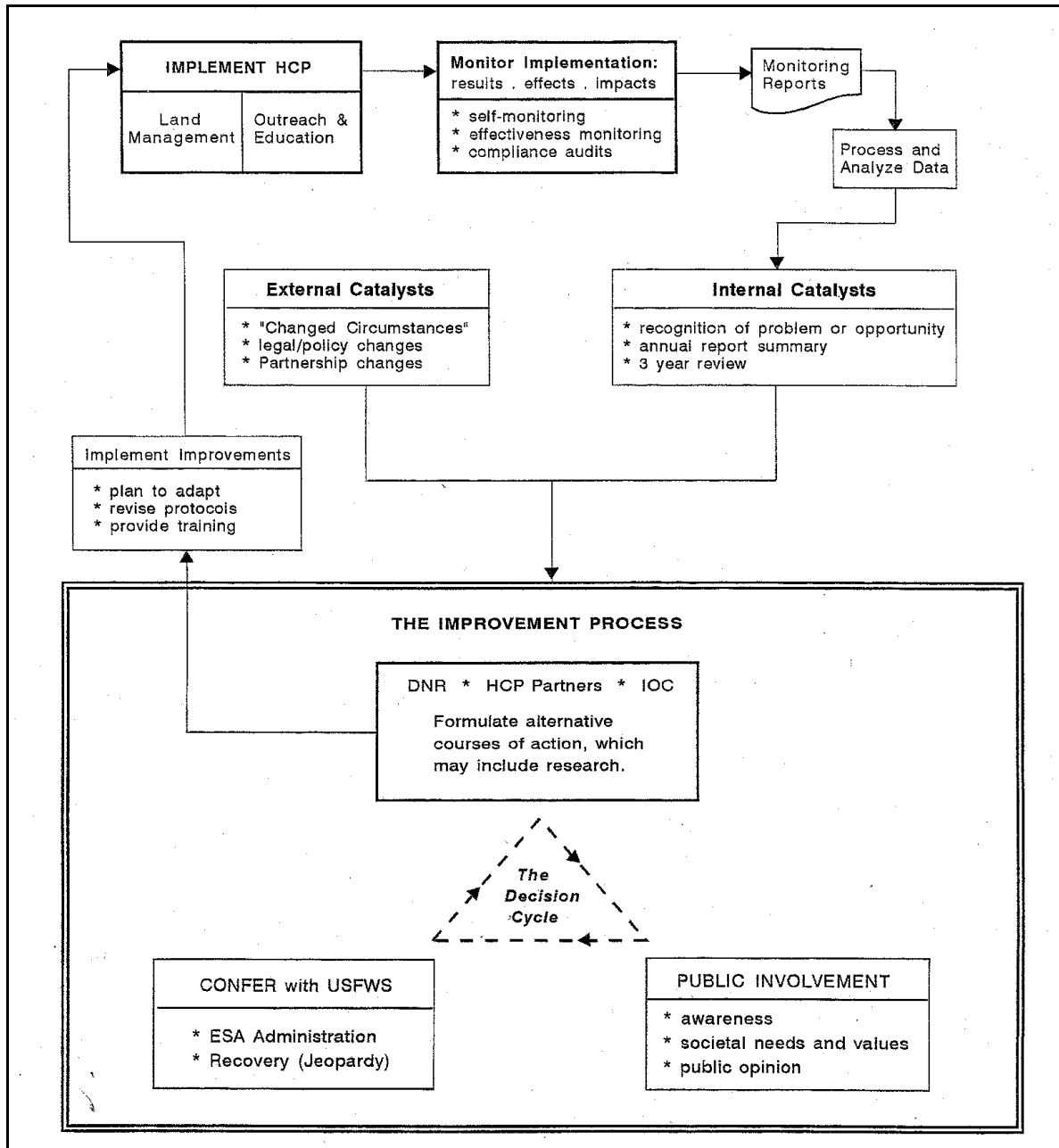
subtraction of a partner. Internal catalysts to change consist of those influences that are within the control of the partnership. These may include the three-year review, the annual report summary,

or, more informally, the identification of a problem or an opportunity by a partner.

The next step, the improvement process, includes the three groups that are involved in the decision cycle: the DNR, IOC and HCP partners; the public; and the USFWS. This is the *evaluation* component of the adaptive management process. The DNR, IOC and the HCP partners develop alternative responses to new information and/or changes brought about by internal or external catalysts. Such responses may range from performing research to amending management practices. Choices made in this regard are influenced both by the need to meet the requirements of the ESA as interpreted by the USFWS and by the need to involve and satisfy public opinion. If a reaction is deemed necessary, then the DNR, IOC and HCP partners determine the appropriate modifications to research or management practices in this step.

The *adaptation* component of the process is the final step. At this point, improvements can be implemented by standardizing the decisions made in the improvement process. This will be accomplished through careful planning, protocol revisions and personnel training. Following this step, the adaptive management process returns to the beginning of the process, with the implementation of new practices.

**Figure 3.7 The HCP Adaptive Management Process**



## 7. Incidental Take of State Listed Species

Wisconsin's endangered species laws prohibit the take of any animal listed as endangered or threatened by the state, regardless of where the animal occurs (see s. 29.604, *Wis. Stats.*). The take of plants listed as endangered or threatened by the state is prohibited only on public property. However, on publicly owned lands, the take of listed plants is not prohibited if it occurs in the course of forestry or agriculture practices or in the construction, operation or maintenance of utility facilities. Wisconsin law instructs other state agencies to notify the DNR of the location, nature and extent of activities that it conducts, funds or approves that may affect an endangered or threatened species.

The DNR may authorize the take of state listed species that would otherwise be prohibited under state law through either scientific take permits or through an incidental take authorization. Scientific take permits may be granted for take that is for zoological, educational or scientific purposes. Incidental take authorization may be granted for take that is not the purpose of, but will be incidental to, the carrying out of an otherwise lawful activity. State agencies may receive authorization to conduct, fund or approve activities that incidentally take species protected under the state endangered species law through a process, known as consultation, with the DNR.

In order to authorize incidental take, the DNR must conclude:

- ☞ the take is not likely to jeopardize the continued existence and recovery of the listed species, or the whole plant-animal community of which it is a part, within the state;
- ☞ the take is not likely to result in the destruction or adverse modification of habitat determined by the DNR to be critical to the species' continued existence within the state;
- ☞ the benefit to public health, safety or welfare justifies the taking activity; and
- ☞ to the maximum extent possible, adverse impacts are minimized and mitigated.

The DNR can authorize itself to conduct, fund or approve an activity that results in the take of an endangered or threatened species, if the activity meets the criteria listed above. As an activity that the DNR is, in part, conducting and funding, implementation of the *Wisconsin Statewide Karner Blue Butterfly Habitat Conservation Plan* may not result in the take of state endangered or threatened species unless incidental take is authorized.

The DNR conducted an analysis of potential impacts to listed species that occur in the Karner blue butterfly's high potential range and on partner lands throughout the state. The anticipated impacts to state listed species known to occur, or likely to occur, on partner lands in the high potential range can be grouped into three categories:

- ☞ those where neither positive or negative impacts are expected,
  - ☞ those where negative impacts, if any, are expected to be short-term or not significant to
-



- 
- the species' state or regional population, and
  - ☞ those where negative impacts could be significant for one or more of the proposed management activities.

The first category includes most of the rare species known to occur, or likely to occur over the next ten years, on partner lands within the Karner blue butterfly's high potential range. These species are not expected to experience any significant impacts, positive or negative, as a result of the Proposed Action alternative. Typically, this is due to the fact that these species' habitat needs are not associated with Karner blue butterfly, pine/oak barrens or dry, sandy soils. Species falling into this category are listed in Table 4.1 (pages 257-258).

Under the Proposed Action alternative, the DNR does not intend to authorize any incidental take of these species because no significant adverse effects are anticipated as a result of HCP implementation. Any actions resulting in the take of these species are subject to the state's endangered species law and will need to be reviewed on an individual basis.

Several of the rare species known to occur, or likely to occur, on partner lands within the Karner blue butterfly's high potential range are closely associated with the Karner blue butterfly and are expected to experience similar positive benefits as a result of the Proposed Action alternative. These species are included in the second category and are identified in Table 5.2 (page 321). As with the Karner blue butterfly, some of these species are dependent upon disturbance of their existing occupied habitat which, although resulting in the taking of individuals or populations, benefits the species over the long-term. Other species in this group are those for which any taking would be limited, both in terms of frequency of occurrence as well as the magnitude of the taking. That is, although there will likely be no positive benefit to the species, any takings will be not be substantial and are not expected to result in any long-term harm to the species distribution or status in the state.

It is the DNR's conclusion that any incidental take of the species listed in Table 5.2 (page 321) which may result from HCP implementation meets the criteria outlined above. As such, the DNR intends, as part of the Proposed Action alternative, to authorize the incidental take of these species in the Karner blue butterfly's high potential range, or other areas approved by the DNR, in the following situations:

- ☞ incidental take that results from management actions conducted in the course of implementing the HCP,
- ☞ incidental take that take place on partners lands, and
- ☞ incidental take that results from management actions conducted by the partners or the activities of voluntary participants under the non-partner participation strategy.

Finally, some listed species could be negatively affected by certain management activities and guidelines described in the HCP (Table 5.3, page 321). For this third category of species, given

their life history needs and the nature of the management activity, further review is necessary to ensure that impacts are minimized and that any incidental take is acceptable. For these species, review on a case-by-case basis is warranted and take of these species will not be authorized.

The DNR will provide partners with a listing of known element occurrences of these species on partner lands. The number of known occurrences on partner lands is small. Partners will be responsible for determining if any of the known element occurrences are located on lands planned for management under the HCP. Management activities proposed where any of these species occur will require individual consultation with the DNR to resolve any potential incidental take and will likely require some form of annual monitoring and reporting. As new information becomes available and management guidelines are developed and revised, the DNR may re-evaluate decisions relative to take authorization. As guidelines are completed, they will be shared with HCP partners and the DNR may reconsider options for incidental take.

---

## **B. No Action Alternative**

This section describes the No Action alternative. It includes a general overview of the alternative and some description of land management activities currently being engaged in by HCP partners. It should be recognized that many of these land management activities could not legally occur on sites with Karner blue butterflies in the absence of the proposed or an individual HCP and ITP.

### **1. General Overview**

Under the No Action alternative, a statewide ITP would not be issued and activities involving take of Karner blue butterflies on non-federal lands would be prohibited under section 9 of the ESA. The DNR would likely not be leading a similar statewide conservation strategy for Karner blue butterflies (the Karner blue butterfly is not listed as threatened or endangered by the state). Land disturbance activities on non-federal lands could continue only where Karner blue butterflies would not be affected; the HCP partners would continue to conduct land management activities, but would need to avoid Karner blue butterfly-occupied sites.

Individual government agencies and private landowners would attempt to continue their respective land use activities and development projects on a project-by-project basis under the terms and conditions imposed by presently existing local, state and federal plans, statutes and regulations. Existing incidental take options available to individual landowners and various levels of government -- section 7 consultations and section 10 HCPs -- would be employed on a case-by-case basis. Legally-binding conservation agreements would not be developed between the individual HCP partners and the DNR; individual entities would carry out their land use and land management activities independent of each other, the DNR, and the proposed implementation oversight committee.

Individual project development would likely preclude coordinating conservation measures. Broad statewide conservation strategies (e.g., management for long-term habitat, management for a shifting mosaic of habitat, or management for dispersal corridors; see Tables 2.13 and 2.15, pages 78-79 and 95-96, respectively) would likely not be coordinated over large acreages or diverse ownerships. A statewide conservation effort, gaining and incorporating the support of landowners and land users throughout Wisconsin, would not be undertaken (i.e. in the absence of the HCP and ITP, there would be no need for the non-partner participation plan described in Part F of Chapter II, pages 127-142). Extensive public outreach and education efforts would likely not be undertaken; the DNR's and the USFWS's ability to conduct such efforts in the absence of the HCP Partnership would be severely limited.

Responsive conservation efforts, such as adaptive management, also would be limited, because

they are best formulated and implemented at a landscape scale. Statewide surveying and monitoring across a range of land management and conservation strategies would be difficult, and potentially, precluded. Land management activities would continue to occur as they currently do, with little or no incentive to modify them, except to avoid take of Karner blue butterflies. The range of guidelines and agreed upon protocols, currently referenced in the partners' conservation agreements or included in the HCP or Appendix F, would not necessarily be used by individual land owners and managers. Decisions related to changes in management techniques would be made more difficult, since fewer monitoring or auditing efforts would be in place. The focus of ESA compliance would be on avoidance of Karner blue butterfly-occupied sites rather than on proactive conservation.

Under the No Action alternative, the partners' estimated annual commitment of \$600,000 to surveying, monitoring, research, public outreach and education, ITP administration, land acquisition and other related activities would not be made. The DNR would likely commit its resources for Karner blue butterfly conservation in a different manner. In the absence of the HCP partnership, it is unlikely that the DNR would allocate a Bureau of Forestry staff position to serve as the HCP Coordinator. Karner blue butterfly conservation efforts would likely remain primarily within the purview of the Bureau of Endangered Resources, would rely on the USFWS section 10 permitting process, and would likely be subject to USFWS section 6 or other funding. Private landowners would need to obtain individual incidental take permits. In addition, overall costs for successfully conserving the Karner blue butterfly and its habitat would likely far exceed the amount currently committed, because conservation done on an uncoordinated, property-by-property basis would cost more.

Partners committing lands to federal recovery efforts (Table 2.20, page 150) would do so outside of the context of the nearly 265,000 acres proposed for proactive management with consideration of Karner blue butterflies (Table 2.11, pages 65-66); of the 265,000 acres included, at least 23,000 acres are committed to federal recovery efforts. The DNR and the Nature Conservancy would likely continue to participate in the federal recovery planning effort. However, the inclusion of DNR lands in the federal recovery plan would likely be viewed differently by department biologists in the absence of the extensive private lands being included in the HCP. Karner blue butterfly conservation efforts would focus more on traditional species protection, than on habitat conservation and management. It is possible that some other HCP partners would also participate in the recovery process, but there would be little or no incentive to do so.

In the absence of the HCP, on-going Karner blue butterfly-related research would likely not be carried out by the individual partners. There would likely not be an institutional forum (i.e. the IOC) for identifying research needs or establishing priorities, and there would be no institutional mechanism for sharing the results of research conducted. Individuals would

continue to rely on traditional ways of finding out about pertinent research results (e.g., through independent library literature searches, participation in professional meetings and conferences,

---

---

etc.).

## 2. Land Management Activities (as Currently Practiced)

The following descriptions represent typical land management activities that are currently being done by the various partner groups. This section presents an overview of how lands are normally managed without modifications to consider Karner blue butterfly conservation. Many of these activities would be prohibited or would require modification in situations where Karner blue butterflies have been documented, unless an individual HCP and ITP was pursued. Currently, emphasis is being placed on avoiding Karner blue butterfly-occupied sites to ensure compliance with the ESA. Some examples of such avoidance measures are noted below.

**Forest Management.** Forest management activities occur on many of the lands within the Karner blue butterfly's documented range. The following are typical land management practices for industrial forestry. Information for this section was drawn primarily from *Forest Management Guidelines* (Lane 1997) and is provided here to give the reader a synopsis of forest management practices.

Timber harvest, site preparation, forest regeneration, stand improvement and road development are all integral to industrial forest management. Each of these aspects is influenced by, among other things, site conditions and characteristics. Soil type, vegetation type, proximity to special features (such as a river or a stream) also help shape the choices available to managers.

**Timber Harvesting.** A variety of components make up the harvesting process. These include the timing, felling method, skidding method and skid road layout. Similarly, a variety of factors influence the harvest methods chosen, such as site preparation needs, vegetation type and site conditions.

Timber harvest may occur in any season, particularly in areas of sandy soils such as in the Karner blue butterfly's documented range. This is primarily due to the better drainage on these sites, giving operations more flexibility. The time it takes to grow the crop of trees being harvested is called rotation length, and varies with the site index and cover type. Site index measures forest productivity and is expressed as the height of the dominant trees in a stand at an index age. Higher quality sites demand less time to produce a merchantable crop. In general, the rotation age for red pine (*Pinus resinosa*) and oak (*Quercus* spp.) is longer than that for jack pine (*P. banksiana*) (Benzie 1977a, b). In the

Karner blue butterfly's documented range, the average rotation length is 60 to 110 years for a red pine crop and 40 to 60 years for a jack pine or aspen (*Populus* spp.) crop. Scrub oak (*Quercus* spp.) may fit either rotation length, depending on the site conditions.

There are two types of harvesting methods: (1) clear cutting, and (2) selective harvest. These are generally used in combination, according to the species being harvested. Due to its longer life span, red pine (*Pinus resinosa*) is more commonly selectively thinned between ages of 30 and 100 years (typically at ten year intervals) and eventually harvested. Jack pine, scrub oak and aspen are more commonly clear cut at their rotation age, typically 40 to 65 years. All of these species are managed in the documented Karner blue butterfly range. Under the No Action alternative, harvest efforts would likely be focused on older stands where the probability of Karner blue butterfly occurrence is lowest.

Felling, or the manner in which a tree is cut down, also has two different methods to choose from: hand harvesting and mechanical harvesting. The choice of method essentially depends on cost efficiency. Mechanical harvest, however, is increasingly becoming the trend. either method could be employed under the No Action alternative, but would be largely restricted to sites unoccupied by Karner blue butterflies. Hand harvesting could be used to harvest around occupied sites. Changes in timing could also help address take concerns in occupied sites (e.g., felling in winter months could reduce the likelihood of adverse effects to Karner blue butterflies).

Skidding refers to the mode used to transport the felled tree. Skidding is commonly accomplished with the use of various types of vehicles. Choices range from wide tired skidders or torsion suspension tracked vehicles to narrow tired machines or normal tracked vehicles. The choice of skidding method is determined primarily by vehicle availability, but also somewhat by site conditions. In the Karner blue butterfly's documented range, the sandy soils allow more flexibility, so the choice of skidding equipment is unfettered. Skidding through Karner blue butterfly-occupied sites could result in take, so efforts would need to be made to avoid such sites.

In order to have a means and route for transporting trees, skid roads are used to access harvest areas. These "roads" are usually informal dirt trails from the area of felling to a defined collector road where hauling trucks are located. Skid roads are more defined and are usually the rows between timber lines in places where selective harvest occurs. For clear cut areas, skid roads are generally undefined and the most efficient means of transporting the cut timber is used. Generally, areas where skid roads may occur are planned and approved; restrictions include, most notably, the edges of waterways. Under the No Action alternative, restrictions would also need to include sites occupied by Karner blue butterflies.

In forest management, slash refers to the residue or brush remaining after a timber harvest. Some harvest systems produce more slash than others; cut-to-length and tree length harvest systems result in more slash than whole tree harvest systems. During the process of harvesting, slash may be managed in a number of ways.

Slash may be stockpiled in one place on the site or evenly scattered. The forest industry

---

---

usually prefers lopped and scattered treatment of slash, because tops and branches may simply be left where the tree was felled. Stockpiling is less common, but is more likely when tree processing occurs at a central landing on the site. In these situations, slash is stockpiled at the central landing where the tree was processed. Under the No Action alternative, slash would need to be managed in ways that reduce the likelihood of take (i.e. occupied sites would be avoided, slash would not be stockpiled in dense piles that preclude lupine, etc.).

Under the No Action alternative, timber harvesting activities would have to be designed to avoid Karner blue butterfly-occupied sites or would otherwise require a USFWS permit.

**Site Preparation.** The objective of site preparation is to reduce competitive vegetation, expose mineral soil and remove logging residues to prepare the site for regeneration. Often, the harvest system methods are chosen to achieve the mechanized soil disturbance desired for the regeneration of the next tree crop. Additional site preparation is usually needed for jack and red pine regeneration. The need to control competing vegetation, however, increases with the quality of the site (Benzie 1977a). Under the No Action alternative, site preparation activities would have to be designed to avoid Karner blue butterfly-occupied sites or would otherwise require a USFWS permit.

The desired site preparation results can be achieved by prescribed burning or by mechanical or chemical methods. The type of site preparation selected has a strong influence on which species survive and which species colonize following disturbance (Cleary, *et al.* 1978).

Prescribed burning is used in forest management to prepare sites for planting, remove slash piles and eliminate refugia for eastern cottontails (*Sylvilagus floridanus*), porcupines (*Erethizon hudsonius*), etc. and to eliminate certain kinds of diseases, such as dwarf mistletoe (*Arceuthobium pusillum*). A primary goal of prescribed fire is to create more open stand structures, thereby improving tree vigor and reducing vulnerability to insects, disease and severe fire (Fiedler 1996). Broadcast burning is fairly common in forest management and conducted throughout the year, except during the spring fire season. In the documented Karner blue butterfly range, however, prescribed burning is generally not used. By definition, the butterfly's range has dry sandy soils; burning in this area is potentially too hazardous.

Mechanical site preparation includes the use of machinery to prepare the soil for regeneration of the next timber crop. This may be achieved by an assortment of machines that break up slash and sod competition or expose patches of bare mineral soil. Scarifying, disking and roller-chopping are some of the functions of these machines. For areas where minor soil disturbance is needed, blading is also done. In the absence of an ITP, most of these activities would be precluded in areas where Karner blue butterflies are known to occur, preventing disturbance that is necessary to maintain important habitat characteristics.

Mechanical site preparation is quite common and is usually done in combination with

chemical site preparation. Herbicides are also used in site preparation, since they are often the most effective and economical way to control competing vegetation. Chemicals may be applied selectively to individual or groups of plants or can be broadcast over the entire site. Use of herbicides by the forest industry is more common than use by public forest management.

Within the Karner blue butterfly's documented range, herbicides are almost always used at the time of planting a new stand. Application is either by broadcast spraying at the time of site preparation or by strip/band spraying while planting. While use of herbicides with artificial regeneration is common, it is rare when natural regeneration is chosen. Entities using herbicides in areas where the Karner blue butterfly occurs would need to design their herbicide applications to avoid take or obtain a permit from the USFWS to authorize any take that may occur.

**Forest Regeneration.** Regeneration is the establishment of a new stand of trees following harvest. The harvest method will have a significant impact on options for site preparation and regeneration. Likewise, the age and condition of the existing stand may influence the selection of the harvest method. For example, a forest infested with jack pine budworm will often require clearcutting, which then dictates the method of regeneration. Generally, the harvest system and site preparation methods are chosen to optimize the regeneration of the new crop. Regeneration methods may be generally categorized as natural or artificial.

Land managers artificially regenerate a forest stand by establishing new trees either by direct seeding or by planting seedlings. Direct seeding can be done by aerial or ground methods and seedlings planted by machine or by hand. Natural generation may be used for jack pine if there are stands with at least ten seed trees per acre with serotinous cones (Benzie 1977b). Two common species, jack and red pine, are typically planted as seedlings. As mentioned, this provides the most reliable means of regeneration and control over stand density and spacing not found with artificial or natural seeding.

Both county forests and the timber industry in the Karner blue butterfly's documented range use natural and artificial regeneration. Because of its speed, forest industries commonly plant seedlings when conducting artificial regeneration. Public land managers, however, are likely to use a combination of seeding and planting as their method of artificial regeneration. Seeding is done by machine, which is most commonly a seed bomb.

An important decision influencing the impact of forestry practices on site characteristics is the choice of the dominant tree species (Mitchell and Kirby 1989). Likewise, site quality affects the selection of the crop species. Jack pine and oak sites with suitable conditions for red pine production, for example, are often converted to red pine. In the Karner blue butterfly's documented range, red and jack pine crop species are quite common, with white

---



---

pine, scrub oak and aspen used as well. Under the No Action alternative, there would be no attempt by partners to apply a shifting mosaic approach to harvest and regeneration. Sites would likely be planted immediately following harvest to avoid Karner blue butterfly occupancy precluding regeneration. Landscapes would continue to be managed in a fragmented manner, with little coordination or cooperation between adjoining owners.

**Stand Improvement.** During the stand rotation (the period from regeneration to final harvest), several types of management practices are conducted to achieve production goals. These include managing the rotation length, thinning and pruning, controlling pests and pathogens and releasing the crop species from competing species. The decision to conduct timber stand improvement depends on management objectives, the value of the species being managed, the point in the rotation and the need to prevent stand mortality or to increase merchantability (Minnesota DNR 1994).

Site quality influences the need for release treatment. In general, there will be a greater need to control competing vegetation on high quality sites (Benzie 1977a). The species of competing vegetation will also determine optimal release treatments (Minn. DNR 1994).

Release refers to the reduction or elimination of vegetation that inhibits the growth or development of the crop species. This "releases" the crop species to grow. Vegetation release treatments are either mechanical or chemical. The release from competing vegetation may be accomplished with the same methods as those used for site preparation.

For mechanical treatments, control of a light cover of woody vegetation can usually be achieved by full-tree skidding, hand-cutting, hand-scalping or machine scalping (Benzie 1977b). Medium cover may require more severe methods such as roller-chopping or disking, and heavy cover may require bulldozing or shearing (Benzie 1977b). Release can be conducted throughout the year (except for oaks). The advantage of mechanical methods is that the competing species are controlled without being permanently eliminated from the site. Although chemical release is more common in the Karner blue butterfly's documented range, both methods are used regularly. The frequency of application is based on necessity, but is usually required only once for any given stand. Chemical treatment is done according to the specifications of the herbicide chosen; glyphosate, for instance, is applied in late August to mid-September. Under the No Action alternative, partners would need to change herbicide applications to avoid potential take of Karner blue butterflies or obtain a USFWS permit authorizing take.

Stand density is best controlled by planting seedlings in lieu of naturally or artificially seeding an area. Thinning, however, is another option for controlling stand density when seeding is the preferred method of regeneration. By selectively removing saplings, an optimal density may be attained. In the Karner blue butterfly's documented range, tree crop thinning is common. Both mechanical and manual methods are used -- sometimes in combination.

Thinning is conducted to increase the quality and quantity of crop trees. The site index, species grown and product type of a stand influence the use of thinning. Thinning is ideally conducted when the crowns or roots of adjacent trees begin to compete for resources (Huebschmann and Martin 1988). There are three types of thinning common to these systems: (1) thinning from below, called low thinning; (2) crown thinning, referred to as thinning from above or crop tree release; and (3) mechanical thinning (Huebschmann and Martin 1988). When thinning from below, trees are cut in the two lower crown classes. Crown thinning removes trees from the upper crown classes, creating small gaps in the canopy. Mechanical thinning is not conducted based on crown position or quality of trees, but rather on a predetermined spacing or pattern. Under the No Action alternative, thinning would need to be conducted at times of year when Karner blue butterflies are not susceptible to damage from the equipment used.

Pruning is often conducted on trees grown for sawtimber to produce strong, high quality, clear wood (Benzie 1977a, b). Pruning is not usually economical if the management objective is to produce pulpwood. In the Karner blue butterfly's documented range, the primary purpose of tree crop production is for pulpwood. Pruning, therefore, is not typically done. Under the No Action alternative, any pruning activities that would be conducted would need to avoid Karner blue butterfly-occupied sites or would need to be otherwise authorized by a USFWS permit.

Other strategies, such as pest and pathogen control, are also used in stand improvement. In the documented Karner blue butterfly range, broadcast spraying is done as needed. Its use is currently fairly rare, except in controlling gypsy moth (*Lymantria dispar*). The gypsy moth is a continuing problem, although little of the Karner blue butterfly's range is affected by this infestation. Gypsy moth is controlled with *Bacillus thuringiensis* var. *kurstaki* (BT), a bacterial insecticide that kills moths and butterflies when it is ingested by their larvae. The frequency of BT spraying depends on the conditions, the season and the vigor and resilience of the pest being controlled. Applications are done during the growing season, typically in June. Under the No Action alternative, federal agencies involved in pest control are required to consult with the USFWS under section 7 of the ESA, if there is a potential for take of Karner blue butterflies. The USFWS has been consulting for several years with the state and U.S. Department of Agriculture (U.S.D.A.) on the potential impact of spraying programs on Karner blue butterflies. To date, the U.S.D.A. has been able to avoid spraying Karner blue butterfly-occupied areas.

**Forest Roads.** The forest industry constructs roads in order to provide access for harvesting, regeneration and stand improvement operations. Because of the good drainage of the sandy soils in the Karner blue butterfly's documented range, little is done for road construction. Typically, forest roads are not surfaced, but are simply cleared corridors. The initial clearing width of the corridor may range from 16 to 20 feet, but the final width used is generally only about ten feet. Under the No Action alternative, forest roads would be constructed to avoid

---

Karner blue butterfly-occupied sites or a USFWS permit authorizing take would be required.

**Barrens, Prairie and Savanna Management.** Some sites within the Karner blue butterfly's documented range are managed as natural communities, such as barrens, prairie or savanna. Land managers of natural communities include the DNR, the Nature Conservancy and some counties. The techniques employed hinge primarily on the management goals for the site. Some land managers, for instance, may be controlling for a specific wildlife species, while others for the ecosystem.

For the larger barrens ecosystem, which includes sand prairie, oak/pine savanna and oak/pine woodlands, vegetation may be controlled with grazing, prescribed fire, mechanical management, herbicide treatment and/or native plant propagation. The design and implementation of a land management regime needs to be appropriate. Individual site variables such as size, landscape context, natural processes, site goals and available personnel and equipment all influence management choices. Under the No Action alternative, parties involved in barrens, prairie and savanna management would need to obtain a section 10 permit from the USFWS which would likely require following the "Wildlife Management Guidelines" included in Appendix F or similar guidelines to avoid or minimize take of Karner blue butterflies. Some barrens management practices would be precluded, unless individual HCPs or scientific take permits were pursued. The DNR currently holds a USFWS research permit that authorizes take of Karner blue butterflies due to barrens, prairie and savanna management. Management is being conducted according to the "Wildlife Management Guidelines" included in Appendix F.

**Grazing.** Some landowners may wish to consider moderated grazing as a management tool for barrens. Together with other natural factors, herds of native bison and elk undoubtedly historically played an integral role in maintaining prairies and savannas. At the DNR's Sandhill State Wildlife Area, the opportunity exists to study how the bison herd impacts the barrens landscape. Grazing, however, is not currently used as a form of management.

**Prescribed Burning.** Prescribed burning is currently the most widely used tool for barrens management. The effects of fire varies according to, among other things, the vegetation, weather and the timing and intensity of the burn. For barrens management, the frequency of prescribed burns depends on what the land manager is trying to achieve. For those focusing on managing for the Karner blue butterfly, prescribed burning is typically conducted once every three to five years per burn unit. This commonly occurs in the spring dormant season, although more managers are beginning to do fall burning or summer burning where fuels loads allow.

**Mechanical Treatment.** Commonly used mechanical tools for barrens restoration and maintenance include mowing, girdling, brush-hogging, tree/brush cutting, site scarification (via rotovating, disking, or bulldozing). Tree cutting or girdling is often a necessary first step when restoring woodland to a more open barrens landscape. Often, these practices are

combined with prescribed burning to better simulate the historical interactions between animal herbivory and wildfire.

**Pesticide Treatment.** In barrens management, the most common use of herbicides is for stump treatment or wick application to control the growth of woody shrubs. Herbicides can be much more effective than burning or mechanical cutting alone in controlling trees and shrubs that resprout, such as Hill's oak (*Quercus ellipsoidalis*), black oak, hazel and aspen. Herbicides may be necessary to control aggressive herbaceous species such as leafy spurge (*Euphorbia esula*), quack grass (*Agropyron repens*) and spotted knapweed (*Centaurea maculosa*). The most commonly used herbicides for barrens management are triclopyr, ester and glyphosate. Under the No Action alternative, herbicide applications would need to avoid Karner blue butterfly-occupied sites or would need to be authorized through a USFWS section 10 permit.

Control of pest species, such as gypsy moths, would also be subject to the ESA under the No Action alternative. Individual property owners not involved in a federal program would be required to obtain an ITP if their gypsy moth spraying activities could affect Karner blue butterflies.

**Native Plant Propagation.** The introduction of native plant species is often a part of barrens restoration and enhancement. The native plants emphasized will depend on the management goals for these natural areas. For instance, some areas are managed by the DNR, Nature Conservancy and counties with attention to the needs of the Karner blue butterfly. The land managers, consequently, may seed areas with wild lupine, nectaring plants, or tall prairie grasses to favor the Karner blue butterfly. By providing adequate nesting and food source plants, other species, such as grassland and savanna birds, may be encouraged as well. Optimally, one would plan a seed mixture that includes several of the Karner blue butterfly's preferred nectar sources and would provide several different types of flowers at any given time throughout season. Flowering will vary for given plants from year to year, depending on weather, management, etc. (Rock 1977; Nichols, *et al.* 1997). Such diversity will help provide for differences in butterfly flight times from year to year.

As a general rule, one should harvest no more than 10-25 percent of available seed from a site to ensure continued reproduction of plants at the site of origin. Guidelines for wild lupine propagation can be obtained from the DNR's Bureau of Endangered Resources. General propagation and planting guidelines for native prairie and barrens species are also available in Umbanhowar (1990), Henderson (1995b), Nichols, *et al.* (1997), and from the Bureau of Endangered Resources or the many native plant nurseries around the state.

**Recreation Management.** Recreational activities occur on public lands throughout the Karner blue butterfly documented range. Possible construction and management practices related to these activities are provided below. Specifications in this section are taken from the DNR's

---

---

*Design Standards Handbook and Operations and Maintenance Standards Handbook for Recreational Areas.* While descriptions of several construction activities are provided below, these types of activities would not be undertaken in occupied sites under the No Action alternative as they would result in permanent take. In order for parties to proceed with these activities, they would need to prepare individual HCPs and ITP applications.

**Trail/Road Construction.** Recreational trail specifications differ somewhat for scenic, nature, bicycling, horse, skiing and snowmobile trails. The trail width during construction and as maintained varies depending on its intended use, although most trails are developed on existing roads formerly used for farm or logging access. Trail widths range from two to 18 feet tread with one to two feet of clearance on either side. Vegetation cleared from the tread and trailside include vines, shrubs, small trees and overhanging branches. Trail surfacing also varies according to use. For most trails, surfacing will be stable soils, grass, sawdust, woodchips, granular material, bituminous paving, or a boardwalk. Typical equipment used during recreation trail development includes small hand tools such as chainsaws, walking mowers, small tractors with brush cutters and small bulldozers for grading.

Recreational areas are likely to need few, if any, new roads. If constructed, however, new roads would be kept as narrow as possible to retain the rustic character of the area. A one-way road may be a minimum of eleven feet wide, and a two-way road a minimum of 22 feet. Drainage ditches too would be kept as narrow as possible. Surfacing for recreational roadways may be native soils, run of gravel pit, screened and crushed gravel or asphalt. Main access roads in recreational areas are commonly paved with asphalt. Equipment involved in recreational road development may include both heavy and light equipment, such as a road grader, bulldozer, turn-a-pull and a small tractor with a blade. Under the No Action alternative, Karner blue butterfly-occupied sites would need to be avoided or individual HCPs and ITP applications would need to be prepared for each project.

The area required for parking development in recreational areas is contingent on the activity and the intensity of use. General requirements, however, are a level area with five percent maximum slope, standard 10 x 20 feet parking stalls, handicapped 11 x 20 feet parking stalls with a five foot walk, oversized 10 x 40 feet parking stalls, and a minimum width of 16 feet for a one way parking lot lane and 25 feet for a two lane. The range of choices for both surfacing and equipment used in parking lot development in recreational areas is the same as those used for roads, as mentioned above. Like road construction, parking lot construction could only be done in unoccupied areas under the No Action alternative.

**Facilities Construction.** Campsite development may require some clearing of forest cover; the size of the area cleared is contingent on both the type of campsite (individual, group, auto access, pedestrian/bicycle access) and the number of sites desired. For this reason, a description of the area affected is not possible. Currently, the county forests within the Karner blue butterfly's documented range have no plans for new campsites. When campsites are

developed, however, equipment typically used in construction ranges from hand tools for primitive sites to heavy equipment such as bulldozers and road graders for auto-access sites.

The size and density of picnic area development can vary according to the sensitivity of the site, proximity to other amenities and other land management considerations. These areas require adjacent parking with a density of six to 20 spaces per acre, as determined by the density of persons per acre. Picnic areas may include amenities such as picnic tables, grills and shelters. During construction, equipment used may include tractors and/or backhoes with a bucket and claw. Under the No Action alternative, Karner blue butterfly-occupied sites would need to be avoided or individual HCPs and ITP applications would need to be prepared for each project.

As with camping and picnic sites, the scale of development for other public facilities such as toilet/shower and maintenance shop/storage buildings depends on the amount of use and activity in the area. While toilet/shower buildings are ordinarily built as part of a campsite, shop/storage buildings are usually located where convenient to maintenance operations. In addition to the building footprint, shop/storage buildings typically have paved areas associated with them that are more than twice the area of the building. A standard shop/storage detail specifies a building area of 40 by 100 feet. Under the No Action alternative, Karner blue butterfly-occupied sites would need to be avoided or individual HCPs and ITP applications would need to be prepared for each recreational development project.

**Maintenance Activities in Developed Areas.** Typically, large areas in campgrounds are not mowed; individual campsites or their collective corridor are mowed, with the remainder left natural. An exception to this would likely be group campsites situated in a large fields. The standard mowing frequency for campsites is between one to three times per year. Control of noxious plants, such as poison ivy, is a concern in intensively used recreational areas such as campsites, picnic areas and trails. Control methods for poison ivy typically involve spraying with one of a variety of herbicides.

Mowing frequency is generally determined by use of the area, type of turf, season and rainfall. Picnic areas are usually maintained at a minimum of two inches and a maximum of five inches, and mowing frequency is dictated by this standard. Although maintenance of picnic areas primarily involves mowing, some areas may require aeration, dethatching, raking, mulching or weed and pest control. As mentioned, noxious weed control is a concern in picnic areas as well. Areas may be sprayed with herbicides. Mowers, aerators, dethatchers and sprayers are among the equipment used for maintenance.

Recreation standards do not specify a requirement or width for roadside maintenance in recreational areas. Nevertheless, mowing is suggested for the control of undesirable roadside vegetation. Maintenance frequency should be minimal; mowing is only conducted as

---

---

necessary for health, safety or ecology. For example, necessary sight distances at intersections would be considered, as well as the encouragement of native flora. The standard mowing frequency for roadsides is between one to three times per year.

Recreational trail management includes regular clearance of vegetation along and above the trail through trimming, mowing and spraying. Following trimming, brush and stumps are often sprayed with an approved herbicide. Approved pesticides may likewise be used to control insects along the path. As with roadways, the standard mowing frequency for trails is one to three times per year. Equipment typically used in trail maintenance includes either a hand mower or a small tractor with a mower. For some trails, such as cross country skiing, regular grooming is also necessary. Typical grooming equipment for cross country skiing trails includes a large snowmobile, a packer and a track setter.

Under the No Action alternative, mowing in sites where Karner blue butterflies occur would be prohibited. Mowing would likely continue, but such sites would be avoided, at least during the growing season when the butterfly's various life stages are present.

**Active and Passive Recreation and Light Consumptive Uses.** Activities occurring in recreational areas are themselves a type of use. Accordingly, recreation should be recognized as a type of land management. A multitude of active and passive recreational pursuits occur within the Karner blue butterfly's documented range. Active recreation includes hiking, biking, skiing, horseback riding, snowmobiling and all-terrain vehicle use, while sightseeing, bird watching and educational tours are considered more passive forms of use. Trail specification ranges given previously indicate the breadth of requirements for these activities. Some activities, such as hiking, occur all year, while others, such as snowmobiling, are season-specific. Many of the trails serve dual purposes for activities occurring in different seasons. Management for these activities may involve assuring that incompatible uses are segregated for safety. Under the No Action alternative, some uses could be prohibited in areas where Karner blue butterflies are known to occur. Others could be restricted by season (e.g., ATV use of trails with dense lupine stands might be considered off limits during summer months, but opened for snowmobiling during deep snow cover).

Light consumptive uses constitute a third class of recreational activities. Fishing, hunting and berry, nut and mushroom gathering fall in this category. Management for these activities may include strategies to ensure a continuation of the resource for consumption. Under the No Action alternative, these uses would continue. Most of these activities would not likely occur in areas occupied by Karner blue butterflies.

**Transportation Management.** The following are typical land management practices by the DOT and county highway departments. Information is summarized from the Wisconsin DOT's *Facilities Development Manual* and *Maintenance Manual*, as well as interviews with DOT and county staff. Land managed by these entities typically occurs on an easement or fee-title right-of-way corridor, with widths varying according to road type, terrain and soils. About 150,000 acres of the Wisconsin state highway system is devoted to roadsides (Ritzer 1990).

Under the No Action alternative, it would be extremely difficult to monitor ESA compliance by town and county highway departments engaged in road construction and maintenance. the DNR would not likely make efforts to bring such entities into a statewide conservation effort. These entities could conceivably continue with their planned activities without considering the Karner blue butterfly or its habitat. Such activity would be in violation of the ESA and would be subject to USFWS enforcement.

**Road Development.** New road construction and reconstruction requires several steps that may include clearance of the corridor, regrading and surfacing. Equipment used during the road development process for these activities include bulldozers, scrapers, graders, pavers, rollers and dump trucks.

Within the High Potential Range, the DOT has plans for converting approximately six hundred acres into ROW for several new road sections. Typical ROW widths for a four-lane

---



---

corridor is 200 feet, with about 50 feet of actual paved roadway. For two-lane highways, ROW widths are 60 to 70 feet, with about 25 feet of actual paved roadway.

The following are new four-lane sections for various highways within the High Potential Range. A new eight mile stretch of state highway 29 is planned between Interstate 94 and Chippewa Falls. This will be a new alignment. In St. Croix County, state highway 64 will have several new sections of about two to three miles between Houlton and New Richmond, and state highway 35 will have a new one to two mile section between River Falls and Interstate 94. About seven miles of new ROW will also be added to highway 53 for the Eau Claire bypass. The DOT has committed, in the EIS for this project, to acquiring expanded rights-of-way and planting native seed mixes, which include lupine, in select portions of the corridor which are adjacent to suitable barrens habitat. Highway 29 is planned for widening from two to four lanes in the existing ROW on a nine mile stretch in Chippewa and Dunn counties. The new four lanes will be constructed adjacent to the existing lanes. There may be opportunities for establishing or enhancing lupine, and thus Karner blue butterfly habitat, along some sections of this corridor.

Several new segments of two-lane highway will also be added. On state highway 54, approximately three miles of new corridor will be added west of Plover. About five miles will be added to U.S. highway 10 in several sections from the Waupaca County line to Amherst. Near Wautoma, one mile of new corridor will be added to state highway 21. Finally, two to three miles of will be added to county highway HH.

The extent of construction on county highways in the documented Karner blue butterfly's range is expected to be limited to widening of existing rights-of-way. Other construction, however, includes two new rest areas along Interstate 94. These usually consist of two to three acres of paved area and 30 to 40 acres of undeveloped area.

Prior to new road construction, a corridor of 66 feet is typically cleared for a two-lane highway and about 200 feet for a four-lane. In this process, most of the vegetation is removed, and the area is regraded according to design specifications. Following construction, the seeding chosen for the right-of-way is conditioned on the existing soil types. On dry upland areas with sandy soils, fescues (*Festuca* spp.), wild ryes (*Elymus* spp.), Kentucky bluegrass (*Poa pratensis*), Canada rye (*Elymus canadensis*), little bluestem (*Andropogon scoparius*) and sideoats gamma grass (*Tripsacum dactyloides*) are seeded. Provisions for native plantings in certain areas are made on rare occasion in "planned vegetation management areas." For these areas, specific roadside management plans accommodate special needs.

During construction, the road and shoulder are graded for drainage off of the road and into the remaining right-of-way. Runoff from the road surface is directed to a drainage ditch 15 to

25 feet from the pavement edge. These ditches then direct runoff water to a nearby stream, lake or wetland. The area paved in highway construction is typically twelve feet per lane, although the gravel and/or paved shoulder and grass area within ten feet of the traffic lane are considered part of the road. Beyond this, collector highways typically have 15 feet on each side for vegetation management, arterial highways have 25 feet and interstate highways have 40 feet, plus another 50 feet for the median. The reconstruction process typically disturbs the entire roadbed, ditch to ditch. Excepting any necessary regrading, soil disturbance from reconstruction in the vegetated area is approximately three inches. This disturbance is primarily from heavy construction equipment.

Under the No Action alternative, each highway construction and reconstruction project that could affect Karner blue butterflies would require an individual HCP and ITP application or consultation with the USFWS pursuant to section 7 of the ESA. It is also possible that the DOT could prepare a single HCP and ITP application to cover all of the state's proposed projects. [Note: Under the Proposed Action alternative, road construction and maintenance activities for all state highways would be covered by the HCP and ITP.](#)<sup>i</sup>

**Road Maintenance.** During the winter months, various techniques are used to keep roadways clear of ice and snow. These include plowing, sanding and salting. The frequency of application for these methods is contingent on weather; these activities are done as needed. Snow precipitation in Wisconsin averages 40 to 80 inches, with the heaviest snowfall occurring in the months of December, January and February.

Typical equipment for plowing both state and county highways is a 14 ton truck with a 10-12 foot blade. The distance snow is thrown from the pavement edge is influenced by the weight of the snow and the speed of the vehicle. The unvegetated shoulder normally extends eight to ten feet from the pavement edge. Under the No Action alternative, this type of maintenance would continue unchanged.

Salt is used to reduce the amount of snow and ice cover that occur on roadways. Salting is done on most county and state highways. Statewide, Wisconsin uses on a five-year average about 349,000 tons of salt per year on its roadways. As snow and ice melt, the salt residue either remains in the soil along the roadside or is eventually washed into surface waters.

Sanding is used on roads with snow and ice cover to increase traction at intersections, hillsides, or in very cold weather when salt will not melt the ice. Sanding is done in combination with salt, but salt is still the primary component of the mixture. On county and state highways, sand is typically left on the roadside. These activities would continue under the No Action alternative, unless road salt was shown to have significant adverse effects on occupied lupine or nectaring plant patches. In such a case, an ITP would be needed to continue this important safety activity.

---

**Vegetation Control.** Within the ROW, different types of vegetative controls are implemented to keep the area free from visual obstruction and maintain aesthetic appeal (Wisconsin DOT, n.d.). A "clear zone" that is free of large woody vegetation is maintained within 25 to 35 feet of the driving lane. For sight distance, some counties may maintain clearance beyond this. Maintenance is usually done by trimming back woody plants, and perhaps treating them with an herbicide.

Herbicides are also used to control woody vegetation within the clear zone. They are used either in small areas or in spot applications. Following pruning, herbicides are often applied to the remaining stubble or stumps. Herbicide types used include clopyralid, which is the most common; Plateau, which is used for leafy spurge (*Euphorbia esula*); and triclopyr or fosemine ammonium, which are used for brush and small trees. The frequency of application is based primarily on the growth rate of the vegetation.

The most common method of vegetative control is mowing. This is administered along roadsides as needed. For both two-lane and divided state highways, outside shoulders are mowed at a maximum of fifteen feet or to the bottom of the drainage ditch, whichever is less. Counties administer all mowing, and throughout the year they maintain the clear zone as time permits. Roadsides are usually mowed twice during the summertime to a minimum vegetation height of six inches. The county and state highway departments do not use prescribed fire as a method of vegetation control. It has been used two or three times historically, but only experimentally.

Under the No Action alternative, vegetation control methods would continue to be applied along roadsides. Mowing and herbicide application would be used, but Karner blue butterfly-occupied sites would need to be avoided to preclude take of the Karner blue butterfly. The timing and method of such maintenance activities would likely be changed in areas where Karner blue butterflies occur. Individual HCPs and ITPs would be needed by the state, county and townships to conduct maintenance activities in areas occupied by the Karner blue butterfly.

**Utility Right-of-Way Management.** The following are some standard land management practices by the private utility industry. Like county and state highways, lands managed by these entities are typically corridors, with widths varying according to the type of utility line. Because many of these corridors are held as easements, the utility industry serves as the land manager, but not the owner.

**Construction of New Overhead Electric Facilities.** When a new electric overhead line is necessary, the utility first procures an easement from the property owner. The terrain is then surveyed and obstructions such as trees are removed. Construction crews drill the holes, insert the utility poles, backfill with gravel and then attach the wire to the pole. Gravel used

for this process may be stockpiled. Persisting ruts are leveled as necessary, and the area is seeded with grass.

Utility construction can occur throughout the year. Depending of the size of the line, the area disturbed ranges from 20 feet for a distribution line to 150 feet for a transmission line. For electric facilities, this area of original disturbance is also the corridor width maintained with vegetation control. Utility companies employ various types of large scale equipment to complete the development process. Pickup trucks, small dump trucks, pole trucks, boom trucks, tractor trailers, track vehicles and all-terrain vehicles are typically involved in the development of a new line. Disturbance from the actual construction will usually last three to four weeks for a given mile of line.

**Construction of New Pipelines.** Pipelines for gas may be constructed of either steel or plastic. Steel pipe lines are typically installed in a trench from three to six feet below the ground surface. Plastic pipes are installed with a plow or a plug plow. Pipe is laid, and the soil is returned to the trench and seeded. The disturbance area for new pipeline construction is primarily linear with a horizontal area of disturbance that may be up to 100 feet wide. However, after construction is completed, the area of disturbance is allowed to revegetate and a permanent ROW of up to 80 feet wide is established. Owing to higher construction costs in winter, pipeline construction usually occurs between April and November.

**Corridor Operations and Maintenance.** Various types of vegetation control are applied to suppress growth and prevent entanglement of woody vegetation with pipes or lines. Management practices differ somewhat between Utility Partners. The frequency of the cycle for the different vegetation controls is dependent on the method used, the type of vegetation present and the height or depth of the line. Currently, prescribed fire is not a common method of vegetation control used by the utility industry.

On smaller plant growth, utility companies mow in order to maintain an open corridor for power and pipelines. Mowing practices vary amongst Partners. Some mow between November and April, with five year cycles; others keep different schedules, such as all year mowing with three to five year cycles. Mowing may be accomplished with a variety of equipment, from a tractor and five foot rotary mower for flat areas to a hydro-axe with a five to seven foot head and a rotary drum head on a backhoe unit with a four foot head for hilly areas. Typically, a four to eight inch stem height is left.

Brush cutting is the primary means of controlling larger plant growth. Chainsaws are used to clear woody stems in excess of fifteen feet. This is typically done throughout the year, on three to seven year cycles.

Typical herbicides used for woody vegetation control include triclopyr, Escort, Accord and

---

---

Arsenal. Applications are administered either with a truck boom sprayer or a backpack sprayer. Areas are treated throughout the year, with foliar compounds applied from June through August for some Partners, May through October for others.

**Powerline Operations and Maintenance.** Operations and maintenance of an overhead powerline include a general facilities inspection once per year. This requires each line to be driven by an all-terrain vehicle or pickup truck and each pole to be inspected from the ground up. Transmission lines are also visually inspected once per year by helicopter. A more detailed inspection is performed once every ten years, also requiring the use of an ATV or pickup truck. Emergencies are typically the result of storm damage and lines to be untangled and replaced. Repairs require essentially the same procedures and equipment as the original construction.

**Pipeline and Underground Transmission Line Operations and Maintenance.** Once installed, pipeline operation and maintenance requires infrequent, typically low intensity disturbance from vehicle traffic. Periodically, the pipeline corridors are patrolled with a truck or an ATV. The pipeline ROW may also be patrolled using aerial surveillance techniques. In addition, leak surveys are performed on a periodic basis, also using a truck, ATV, or aerial surveillance technology. Emergency operations typically result from excavators damaging a pipe. In such an event, procedures include accessing the site via truck, exposing the area of the break and performing the repair and remedial activities associated with the leak.

Under the No Action alternative, utility construction and maintenance activities would need to avoid impacts to Karner blue butterflies. Construction and maintenance activities that may affect the Karner blue butterfly would require individual section 10 permits or section 7 consultations with the USFWS per the ESA.

## **C. Comparison of Alternatives**

Parts A and B of this chapter described the Proposed Action and No Action alternatives, respectively. The main features of each of the alternatives are summarized in Table 3.3 (pages 240-243). This table provides a qualitative comparison of the No Action and Proposed Action alternatives.

**Table 3.3. Comparison of Proposed Action and No Action Alternatives**

	<b>Proposed Action Alternative</b>	<b>No Action Alternative</b>
Incidental Take Permit	statewide ITP issued by USFWS to DNR as lead applicant for HCP partnership	no statewide ITP issued by USFWS to DNR; individual partners pursue individual HCPs/ITPs or research permits; DNR renews its research permit for barrens, prairie and savanna management
Implementing Agreement	signed implementing agreement between USFWS and DNR	no signed implementing agreement; individual partners enter into individual agreements with USFWS
Species and Habitat Conservation Agreements (Conservation Agreements)	signed, legally-binding agreements between partners and the DNR	no signed, legally-binding agreements between partners and the DNR; individual partners pursue individual permits and enter into individual agreements with USFWS
Acres Committed to Proactive Management for Karner Blue Butterfly	264,916 acres committed by partners, with potential for additional acres to be added	unknown number of acres committed
Commitment of Public Lands to Karner Blue Butterfly Conservation	181,222 acres committed by state agencies and county forests, with potential for additional acres to be added; 21,665 acres of state lands included in federal recovery efforts	unknown number of acres committed, but likely some committed to conservation and federal recovery efforts by the DNR and the Nature Conservancy

**Table continues on next page.**

---

**Table 3.3. Comparison of Proposed Action and No Action Alternatives, Cont.**

	<b>Proposed Action Alternative</b>	<b>No Action Alternative</b>
Land Disturbance/Land Management Activities	legally allowed to occur in areas where Karner blue butterflies occur, consistent with HCP and ITP provisions; specific activities modified by agreed upon guidelines and protocols; relatively easy to monitor and enforce	legally prohibited in areas where Karner blue butterflies occur without modification to avoid or minimize take, but allowed in areas without Karner blue butterflies; activities covered by numerous individual permits; no agreed upon guidelines and protocols; extremely difficult to enforce
Broad Conservation Strategies	broad strategies, coordinated over large acreage and diverse ownership; coherent approach to conservation	multiple, uncoordinated, individual efforts at best; fragmented approach to conservation in most cases
Participation Strategy	statewide, with geographic areas of focus	no statewide participation strategy; individual efforts uncoordinated, or, at best, weakly coordinated
Public Outreach, Education and Information	statewide, with geographic areas of focus; funded by multiple partners; multiple targeted audiences	based on opportunities as they arise with limited or no focused efforts; limited number of targeted audiences by the DNR and USFWS, at best

**Table continues on next page.**

**Table 3.3. Comparison of Proposed Action and No Action Alternatives, Cont.**

	<b>Proposed Action Alternative</b>	<b>No Action Alternative</b>
Adaptive Management	applied across a broad landscape, with commitments to monitoring, research and appropriate changes to management practices	no coordinated, statewide strategy underlying efforts; fragmented approach to conservation; uncertain commitment to monitoring and research
Surveying/Monitoring	statewide strategy, encompassing full range of management activities and conservation strategies; usable for adaptive management	property-by-property at best; less surveying and monitoring completed; limited use for adaptive management
Guidelines/Protocols	clearly defined, guidelines included in conservation agreements, HCP and ITP; shared learning through IOC; useful for adaptive management	individually tailored guidelines developed as individual entities pursue individual HCPs/ITPs; no shared learning through IOC; limited use for adaptive management
Auditing/Reporting	formal system with agreed upon format and DNR/USFWS oversight	no formal system; individual applicants monitored by USFWS
Financial Commitment	approx. \$600,000 annually	unknown

**Table continues on next page.**



---

**Table 3.3. Comparison of Proposed Action and No Action Alternatives, Cont.**

	<b>Proposed Action Alternative</b>	<b>No Action Alternative</b>
Research	carried out by HCP partners; institutional means of identifying needs and priorities	likely no institutional means for identifying needs and priorities; limited research expected
Multi-species Protection	commitment by several partners to manage associated species; indirect benefits to other disturbance-dependent species from Karner blue butterfly management	unknown; likely little or no commitment to proactive management for disturbance-dependent species
Enforcement	legally-binding agreements and auditing process facilitates ESA compliance over large acreages	USFWS enforcement on a case-by-case basis

#### **D. Alternatives Not Selected for Detailed Analysis**

During the course of the development of the Wisconsin Karner Blue Butterfly HCP, the partners and participants considered a number of alternatives to the statewide plan and the No Action alternative. These alternatives and the reasons they were not selected are discussed in Part J of Chapter II of the HCP (pages 183-185).